A202/A203 COPIER

SERVICE MANUAL

The A202 copier is based on the A151 copier.
The A203 copier is based on the A152 copier.

Only the differences from the A151/A152 copier are described in the following pages. Refer to the A151/A152 copier service manual regarding the other information.

1. SPECIFICATIONS

NOTE: Only items marked with ✻ are different from A151 and A152 copiers.

Configuration:	Desk top
Copy Process:	Dry electrostatic transfer system
Original Type:	Sheet/Book
Original Alignment:	Left center
Original Size:	Maximum: A3/11" x 17" (lengthwise) - A203 copier B4/10" x 14" (lengthwise) - A202 copier
Copy Paper Size:	Maximum: B4/10" x 14" (lengthwise) Minimum: Paper Tray: A5/5 1/2" x 8 1/2" (lengthwise) Bypass Feed: A6/5 1/2" x 8 1/2" (lengthwise)
Copy Paper Weight:	Paper tray feed -- 64 to 90 g/m^2 (17 to 24 lb) Bypass feed -- 52 to 105 g/m^2 (14 to 28 lb)
Reproduction Ratios:	2 Enlargement and 3 Reduction (A203 copier only)

	A4 Version	Letter Version
Enlargement	141% 122%	129% 121%
Full size	100%	100%
Reduction	93% 82% 71%	93% 74% 65%

Zoom:	From 61% to 141% in 1% steps (A203 copier only)
Copying Speed:	13 copies/minute (A4/8 1/2" x 11" lengthwise) 10 copies/minute (B4/8 1/2" x 14")
Warm-up Time:	30 seconds (at 20°C/68°F)
First Copy Time:	9 seconds (A4/8 1/2" x 11" lengthwise)
Copy Number Input:	Number keys, 1 to 99
Manual Image Density Selection:	7 steps

Automatic Reset: 1 minute standard setting; can also be set to 3 minutes or no automatic reset.

Energy Saver Function: Automatic

Paper Capacity: Paper tray -- 250 sheets or less than 28 mm stack height
Bypass feed table -- 1 sheet

Toner Replenishment: Cartridge exchange (320 g/cartridge)

Copy Tray Capacity: 100 sheets (B4/10" x 14" or smaller)
1 sheet (OPC)

✻ Power Source: 110 V/60 Hz/15 A (for Taiwan)
120 V/60 Hz/15 A (for North America)
220 V ~ 240 V/50 Hz/8 A (for Europe)
220 V/50 Hz/8 A (for Middle East)
220 V/60 Hz/8 A (for Saudi Arabia)
220 V/50 Hz/8 A (for Asia)
Refer to the serial number plate (rating plate) to determine the power source required by the machine.

Power Consumption:

	Copier Only	With DF
Maximum	1.4 kVA	1.5 kVA
Warm-up	620 VA (average)	640 VA (average)
Copy cycle	810 VA (average)	860 VA (average)
Ready	160 VA (average)	180 VA (average)

✻ Noise Emission:

Sound power level (The measurements are made in accordance with ISO 7779.)

	Copier Only	Copier with document feeder
Copy cycle	Less than 64 dB	Less than 62 dB
Stand by	Less than 55 db	Less than 40 dB

Sound pressure level (The measurements are made in accordance with ISO 7779 at the operator position.)

	Copier Only	Copier with document feeder
Copy cycle	Less than 58 dB	Less than 62 dB

Dimensions:

	Width	Depth	Height
Copier with platen cover and copy tray	713 mm (28.1")	592 mm (23.3")	400 mm (15.7")
Copier with document feeder and copy tray	713 mm (28.1")	592 mm (23.3")	463 mm (18.2")

Weight: Copier only: 43 kg (94.8 lb)
With DF: 50 kg (110.2 lb)

Optional Equipment: (Sales items)
Document feeder (A203 copier only)
Key counter

Optional Equipment: (Service items)
Drum anti-condensation heater
Optics anti-condensation heater
Pre-transfer lamp

- Specifications are subject to change without notice.

2. COPY PROCESS CONTROL

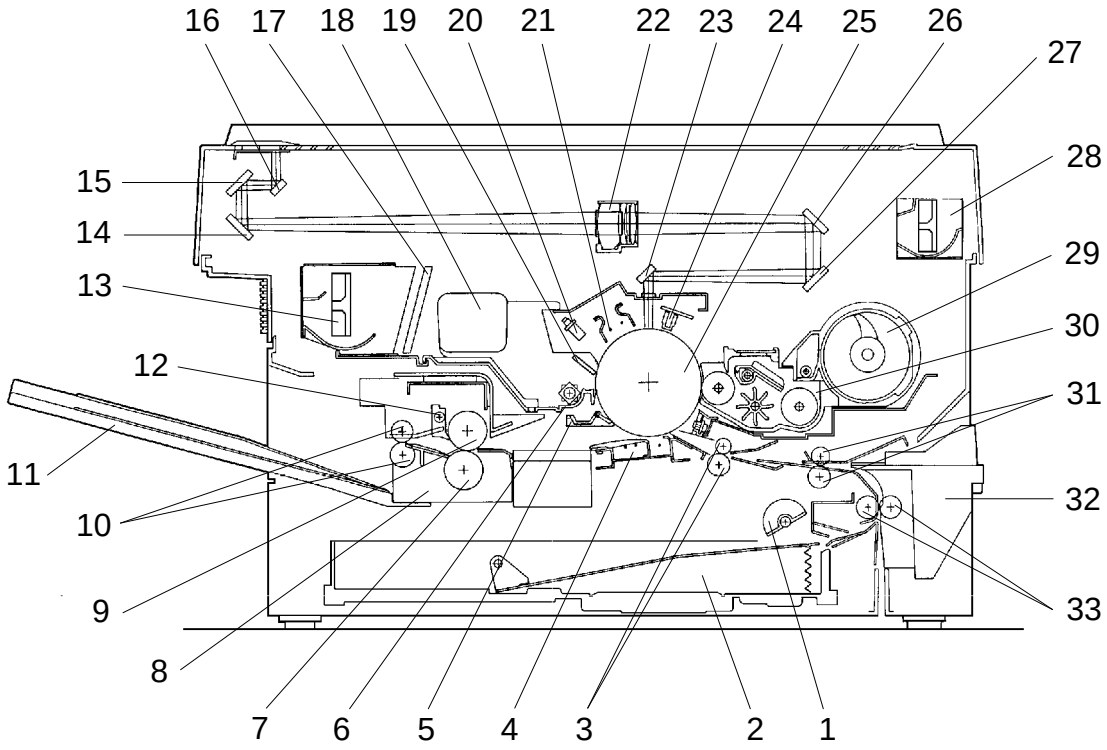
- Drum residual voltage (V_R) correction and detection have been eliminated.
- Drum wear correction has been eliminated.

	Grid Voltage	Exposure Lamp Voltage	Development Bias Voltage	Erase Lamp
Image Density Control	Standard image density grid voltage (--680 V) + [Auto image density level factor (SP34)]	[Base exposure lamp voltage (Manual or ADS mode) (SP48)] + V_L correction factor + Reproduction ratio correction factor (A203 copier only)	[Base bias voltage factor (Manual or ADS mode) (SP34)] + [Image bias voltage adjustment factor (SP37)] + Note: Base bias voltage at manual ID level 7 can be adjusted with SP50	Depends on paper size and reproduction ratio
Toner Density Detection	Standard ID sensor grid voltage (--460 V)	Same as image density control	[Depends on ID sensor bias setting (SP33)] Note: For the initial 499 copies, bias voltage is increased by --20 volts	ID sensor pattern erase (Vsg detection: Full erase)
Between Copies	0 Volts (Fixed)	Exposure lamp turns off	--160 Volts (Fixed) + [Image bias voltage adjustment factor (SP37)]	Full erase (All LEDs ON)

NOTE: The boxed items can be adjusted by SP mode.

3. MECHANICAL COMPONENT LAYOUT

NOTE: Only items marked with ✻ are different from A151 and A152 copiers.

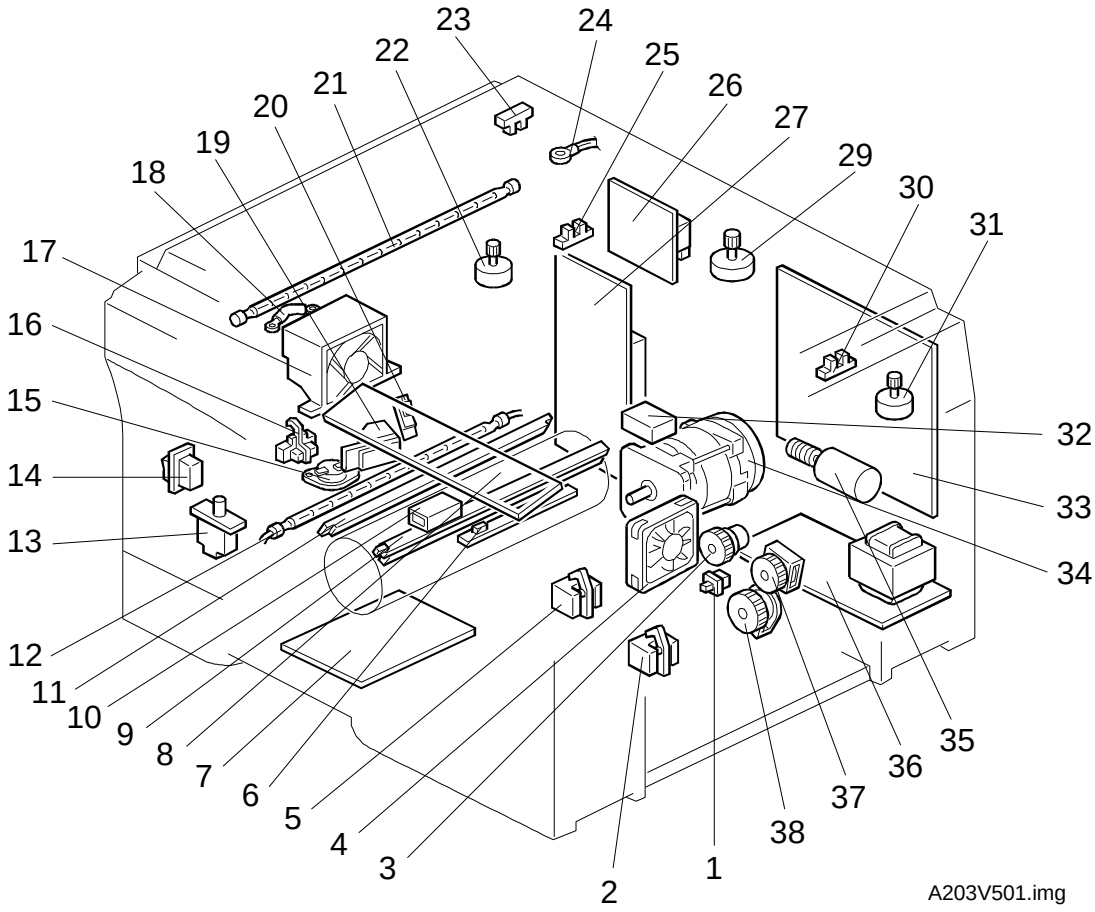


A203V500.img

1. Semicircular Feed Rollers
2. Paper Tray
3. Registration Rollers
4. Transfer and Separation Corona Unit
5. Pick-off Pawl
6. Cleaning Unit
7. Pressure Roller
8. Fusing Unit
9. Hot Roller
10. Exit Rollers
11. Copy Tray
12. Hot Roller Strippers
13. Exhaust Blower Motor
14. 3rd Mirror
15. 2nd Mirror
16. 1st Mirror
17. Ozone Filter
18. Used Toner Tank
19. Cleaning Blade
20. Quenching Lamp
21. Charge Corona Unit
22. Lens
23. 6th Mirror
24. Erase Lamp
25. Drum
26. 4th Mirror
27. 5th Mirror
- ✻ 28. Optics Cooling Fan Motor (in A202 & A203)
29. Toner Supply Unit
30. Development Unit
31. 2nd Relay Rollers
32. By-pass Feed Table
33. 1st Relay Rollers

4. ELECTRICAL COMPONENT LAYOUT

NOTE: Only items marked with ✻ are different from A151 and A152 copiers.



A203V501.img

1. Paper Tray Switch
2. Relay Sensor
3. Registration Clutch
✻ 4. Optics Cooling Fan Motor
5. Registration Sensor
6. Image Density Sensor
7. Power Pack-TC/SC
8. Operation Panel Board
9. Erase Lamp
10. Total Counter
11. Quenching Lamp
12. Fusing Lamp
13. Front Cover Safety Switch
14. Main Switch
15. Fusing Thermoswitch
16. Exit Sensor
17. Exhaust Blower Motor
18. Optics Thermofuse
19. Auto Image Density Sensor
20. Fusing Thermistor
21. Exposure Lamp
22. Lens Motor (A203 copier only)
23. Scanner Home Position Sensor
24. Optics Thermistor
25. Lens Home Position Sensor (A203 copier only)
26. Power Pack-CC/Grid/Bias
27. AC Drive Board
✻ 28. N/A
29. Scanner Motor
30. 4th/5th Mirror Home Position Sensor (A203 copier only)
31. 4th/5th Mirror Motor (A203 copier only)
32. Main Motor Capacitor
33. Main Board
34. Main Motor
✻ 35. Toner Supply Motor
36. DC Power Supply Board
37. Relay Roller Clutch
38. Paper Feed Clutch

NOTE: Index No. 28 is not applicable for this model.

5. ELECTRICAL COMPONENT DESCRIPTIONS

The following motor is included as an electrical component.

Symbol	Name	Function	Index No.
M7	Toner Supply Motor	Drives the toner supply roller.	35

The following clutch and triac are not included in this copier.

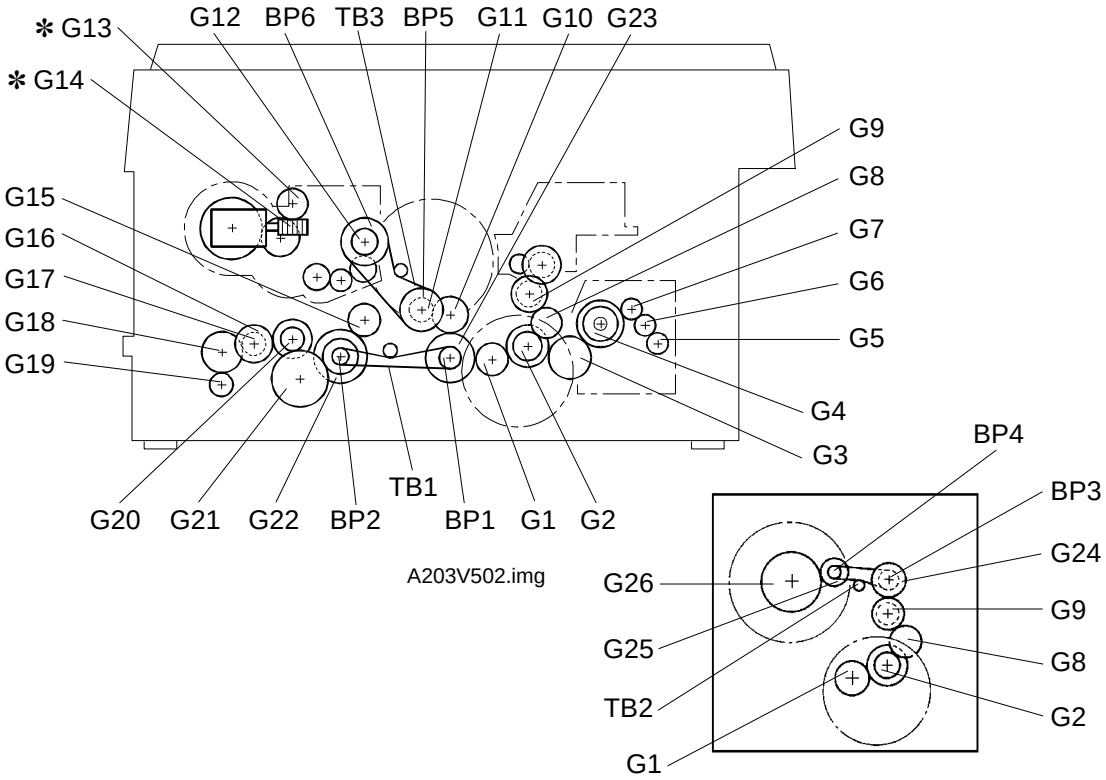
Symbol	Name	Function	Index No.
MSC1	Toner Supply Clutch	Drives the toner supply roller.	35
TR	Fusing Triac (115 V only)	Switches the fusing lamp on and off.	28

The following part has been changed.

Symbol	Name	Function	Index No.
L3	Quenching Lamp	Receives dc power from the main board (the lamp in the A151/A152 received ac power from the ac drive board).	11

6. DRIVE LAYOUT

NOTE: Only items marked with ✻ are different from A151 and A152 copiers.



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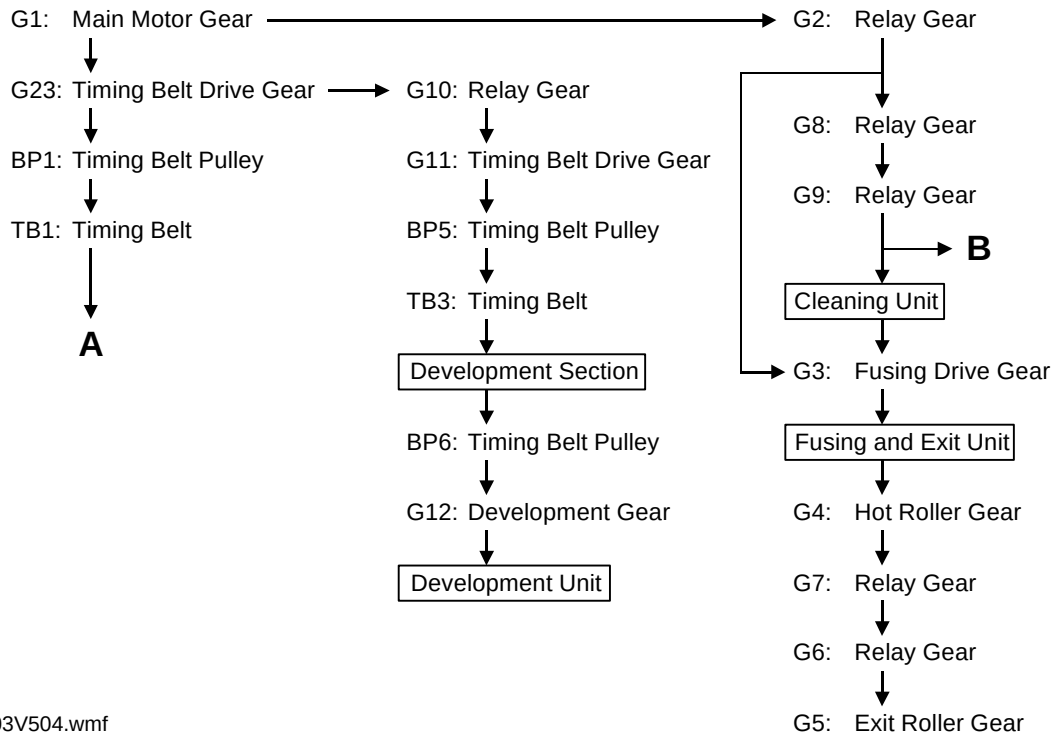

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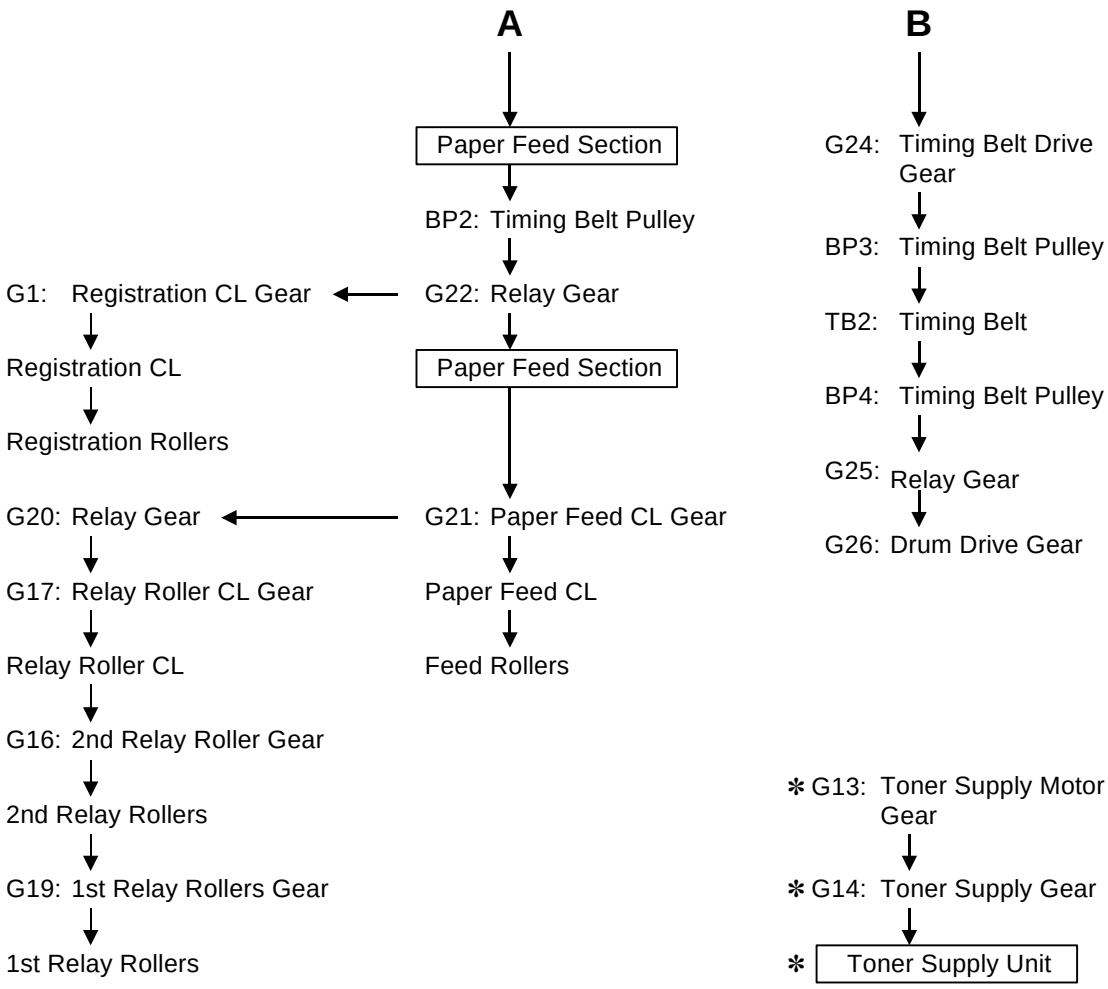

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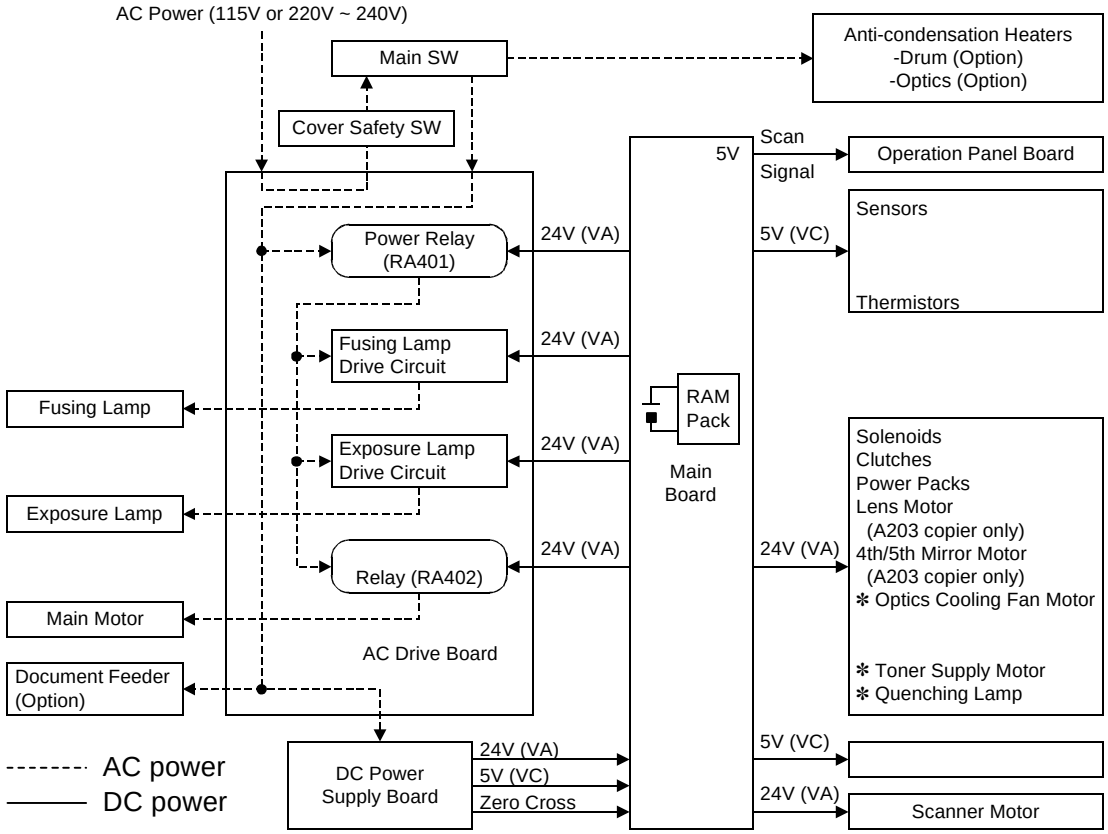
7. POWER DISTRIBUTION

NOTE: Only items marked with ✻ are different from A151 and A152 copiers.



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When this copier is plugged in and the main switch is turned off, ac power is supplied via the ac drive board to the optional anti-condensation heaters. When the front cover and/or the exit cover is open, the cover safety switch completely cuts off power to all ac and dc components.

When the main switch is turned on, the ac power supply to the anti-condensation heater is cut off and ac power is supplied to the ac drive board. The dc power supply board receives wall outlet ac power through the ac drive board.

The dc power supply board converts the wall outlet ac power input to +5 volts, +24 volts, and a zero cross signal, all of which are supplied to the main board.

The main board supplies dc power to all copier dc components. All sensors, switches, thermistors, and the DF interface board (option) operate on +5 volts. The operation panel operates on +5 volts supplied by the main board.

All other dc components, including the power relay (RA401) and the main motor relay (RA402), operate on +24 volts.

When the main board receives power, it activates the power relay (RA401), which then supplies ac power to the fusing lamp drive circuit and the exposure lamp drive circuit on the ac drive board. The fusing lamp drive circuit receives a trigger signal from the main board and the fusing lamp lights. The exposure lamp does not turn on until the main board sends a trigger pulse to the exposure lamp drive circuit.

When the ⏎ key is pressed, the main board energizes the main motor relay (RA402). Then, the main motor turns on.

When the main switch is turned off, power to the main board and to RA401 is cut off, and the optional drum and optics anti-condensation heaters are turned on.

8. DRUM CHARGE

8.1 GRID VOLTAGE CORRECTION

This machine does not correct drum residual voltage correction (V_R correction) or drum wear correction.

8.2 GRID VOLTAGE FOR IMAGE DENSITY CONTROL

The main board controls the grid voltage through the CC/Grid/Bias power pack. As the grid voltage for the image density control becomes less, the copy image becomes lighter, and vice versa.

The grid voltage for image density is based as follows:

Grid Voltage = Standard image density grid voltage (–680 volts [SP60 = 4])
+
Auto image density level factor (SP34)

8.2.1 Standard Image Density Grid Voltage

The standard image density grid voltage (SP60) is set at the factory and the setting is different for each machine. The setting of SP60 is printed on the SP mode data sheet located inside the inner cover of the machine.

8.2.2 Auto Image Density Level Factor (SP34)

Auto image density level	Data (SP34)	Change of grid voltage (volts)
Normal	0 *	±0
Darker	1	–40
Lighter	2	±0

* Factory setting

The grid voltage and the exposure lamp voltage are constant regardless of the output from the auto image density sensor. Only the development bias voltage varies depending on the output from the auto image density sensor.

When the auto image density level data in SP34 is set to darker, the grid voltage is changed –40 volts as shown in the above table. When it is set to lighter, the grid voltage does not change. However, the development bias voltage is corrected.

8.3 GRID VOLTAGE FOR TONER DENSITY DETECTION

The grid voltage for toner density detection is based on the standard ID sensor grid voltage.

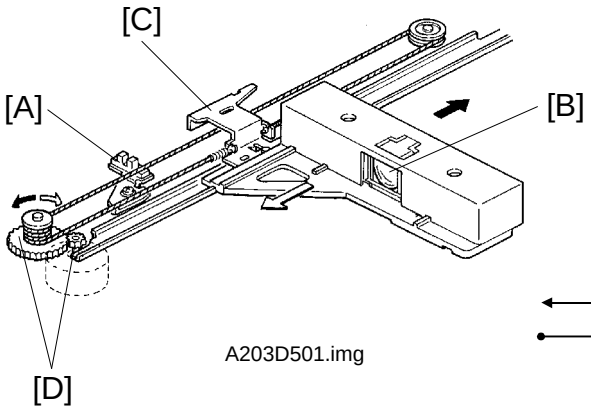
Grid voltage = Standard ID sensor grid voltage (--460 volts [SP62=4])

The standard ID sensor grid voltage (SP62) is set at the factory and the setting is different for each machine.

The setting of SP62 is printed on the SP mode data sheet located inside the inner cover of the machine.

9. OPTICS

9.1 LENS POSITIONING



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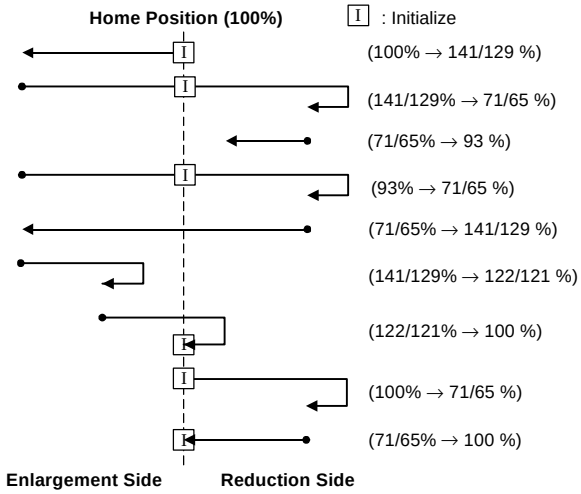

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The lens home position sensor [A] informs the main board when the lens is at the full size position (home position). The main board determines the lens stop position in reduction and enlargement modes by counting the number of steps the motor makes with reference to the lens home position. When a new reproduction ratio is selected, the lens [B] moves directly to the selected magnification position.

The lens home position is registered each time the lens starts from or passes through the lens home position sensor. As the lens moves from the enlargement side to the reduction side, the sensor registers the home position. This occurs when the actuator plate [C] enters the lens home position sensor.

A small vibration can be observed when the lens moves through home position from the enlargement side to the reduction side because the lens is going in the wrong direction to register the home position. The lens overshoots the home position by four pulses before going back to register the home position.

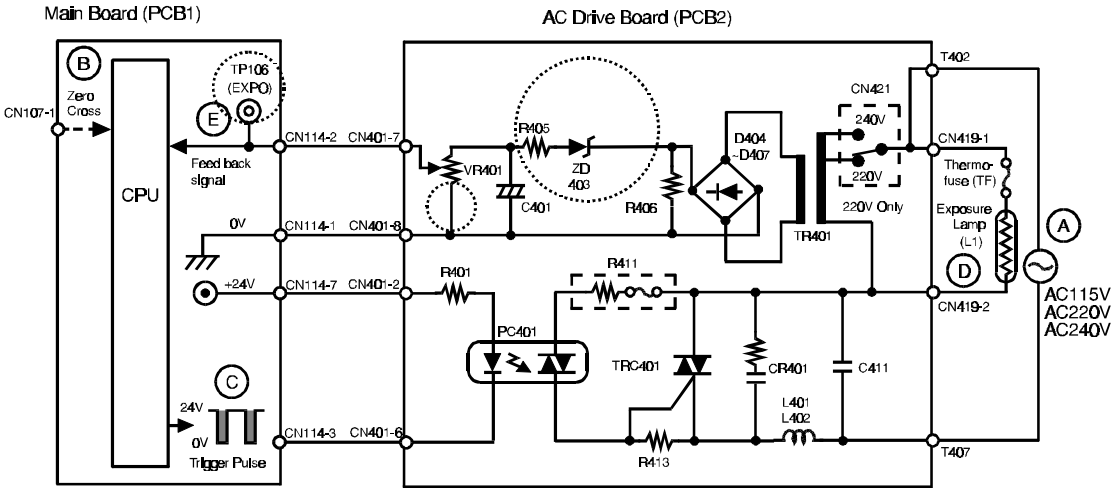
The lens always stops while moving from left to right (as viewed from the front) to minimize the error caused by mechanical play in the drive gears [D].

9.2 BASE LAMP VOLTAGE IN MANUAL IMAGE DENSITY MODE

SP48 sets the exposure lamp data for level 4 (Vo) of manual image density mode. A value from 100 to 170 can be selected.

9.3 EXPOSURE LAMP CONTROL CIRCUIT

The circuit is different from A151 and A152 copiers at the indicated locations.



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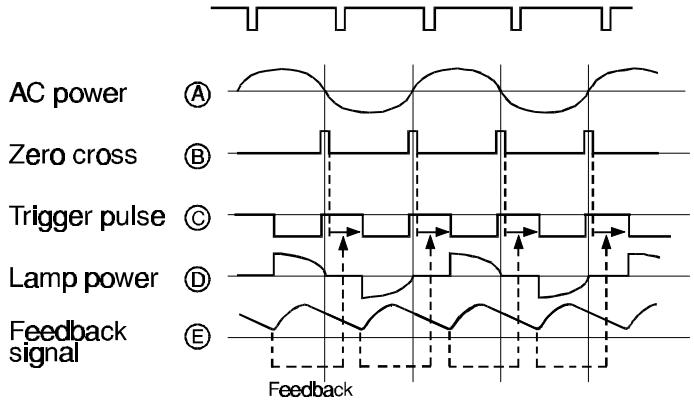

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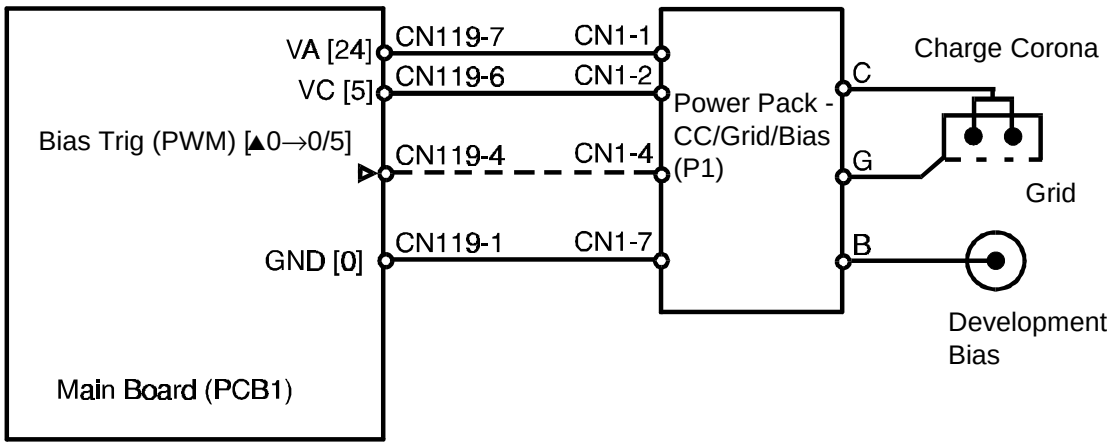
10. DEVELOPMENT

10.1 DEVELOPMENT BIAS CIRCUIT



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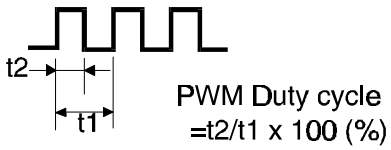

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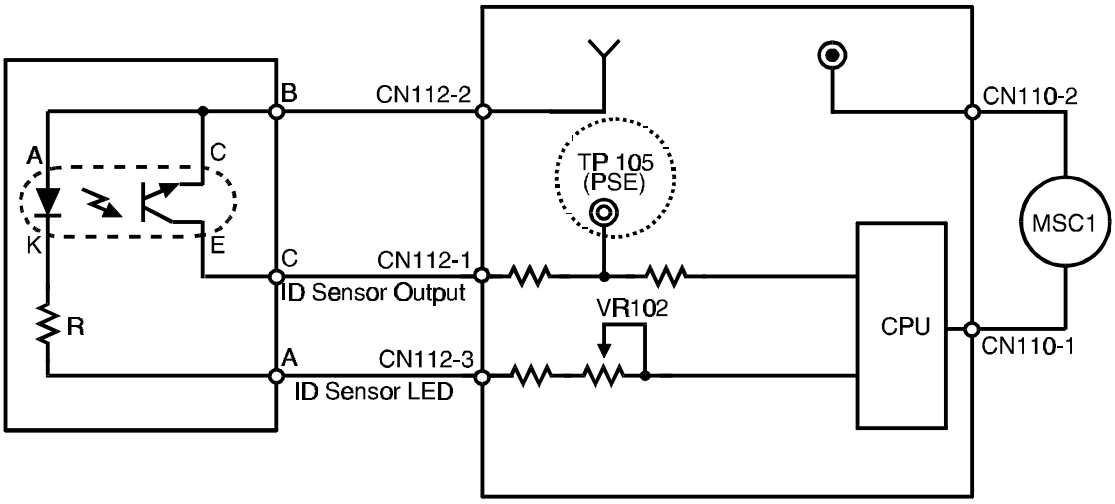
The main board supplies +24 volts to the CC/Grid/Bias power pack at CN1-1. When the ⊡ key is pressed, the CPU starts sending the bias trigger pulses to CN1-4. This energizes the development bias circuit within the CC/Grid/Bias power pack, which applies a high negative voltage to the development roller. The development bias is applied whenever the drum is rotating.

The bias trigger pulse applied to CN1-4 is a pulse width modulated signal (PWM signal). The width of the pulses controls the voltage level of the development roller. As the width of the trigger pulses increase, the voltage to the development roller also increases. The power pack is equipped with its own feedback circuit to monitor the development bias voltage.

11. TONER DENSITY DETECTION AND TONER SUPPLY

11.1 ID Sensor Control Circuit

This circuit is different from A151 and A152 copiers at the indicated location.



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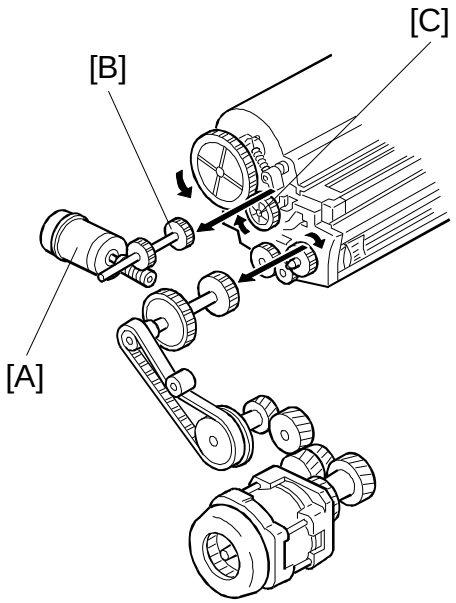
11.2 TONER SUPPLY AND AGITATOR DRIVE MECHANISM



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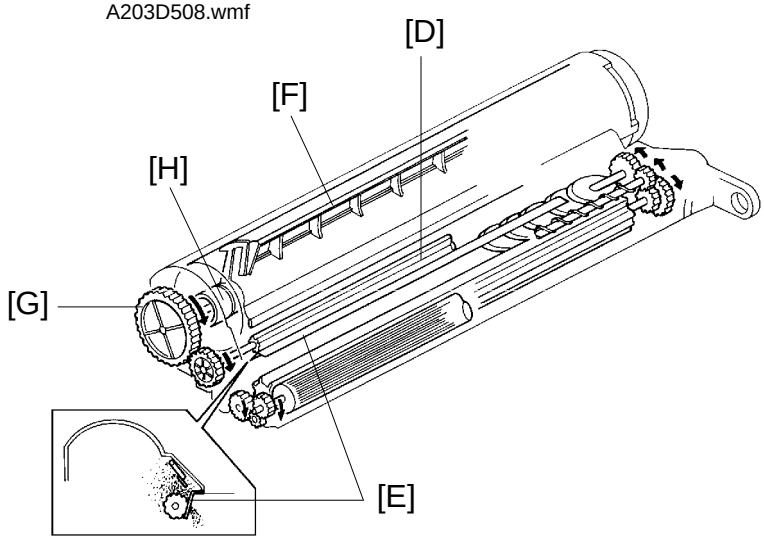

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When the toner supply motor [A] energizes, the toner supply drive gear [B] starts turning and drives the toner supply roller gear [C]. Toner catches in the grooves on the toner supply roller [D]. Then, as the grooves turn past the pin hole plate [E], the toner drops into the development unit through the pin holes.

The toner agitator [F] mechanism, which is contained in the toner cartridge, prevents toner from clumping. The toner agitator gear [G] turns whenever the toner supply motor energizes. Rotation passes through the toner cartridge casing to the agitator junction [H].

12. PAPER FEED

12.1 PAPER LENGTH DETECTION (Paper Feed Station)

The paper length is measured by the registration sensor while paper is fed past the registration sensor.

This is performed during every first copy.

As shown by the following table, the CPU determines the size of the paper in the paper tray based on the paper length measured by the registration sensor.

Paper length (mm)	Paper size
364	B4
356	10" x 14"
330	8 1/2" x 13"
297	A4R
279	8 1/2" x 11"
267	8" x 10 1/2"
257	B5R
254	8" x 10"
216	5 1/2" x 8 1/2"
210	A5R

Since the CPU does not have the paper length in memory for the first copy cycle, the CPU controls the machine for the maximum paper size of B4 (257 mm x 364 mm).

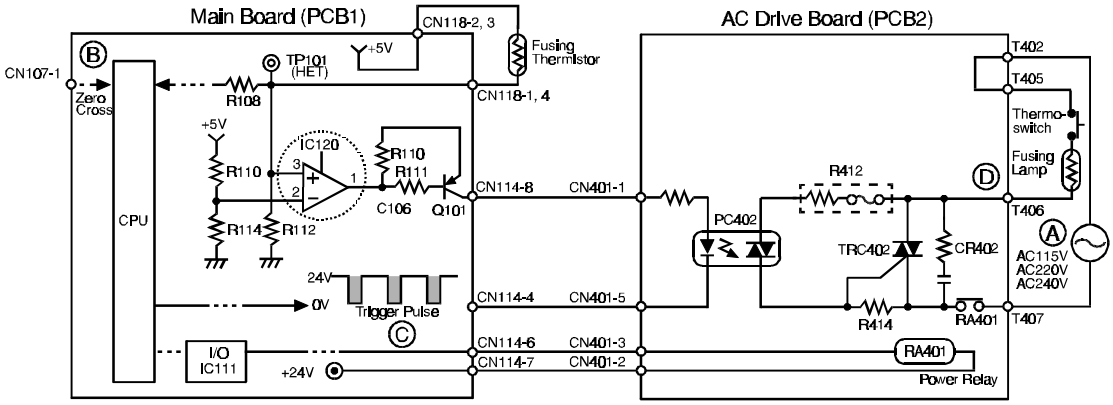
From the second copy cycle on, the CPU controls the machine for the correct paper size based on the data stored during the first paper cycle.

Whenever the by-pass feed table is used, the CPU determines the paper size to be B4 (257 mm x 364 mm).

13. IMAGE FUSING

13.1 FUSING LAMP CONTROL CIRCUIT

The circuit of the main board is different from A151 and A152 copiers at the indicated location.



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13.2 OVERHEAT PROTECTION

IC120 and Q101 form an overheat protection circuit. When the fusing lamp is controlled within the normal range, pin 1 of IC120 stays LOW; therefore, Q101 stays on, allowing PC402 to operate. If the hot roller temperature reaches 240°C, the resistance of the thermistor becomes too low. At that time, pin 1 of IC120 becomes HIGH, turning off Q101 and stopping PC402. At the same time "E53" lights on the operation panel and the power relay (RA401) turns off.

Even if the thermistor overheat protection fails, a thermoswitch installed in series with the fusing lamp prevents the fusing unit from excessive overheating. If the thermoswitch temperature reaches 170°C, the thermoswitch opens, removing power from the fusing lamp.

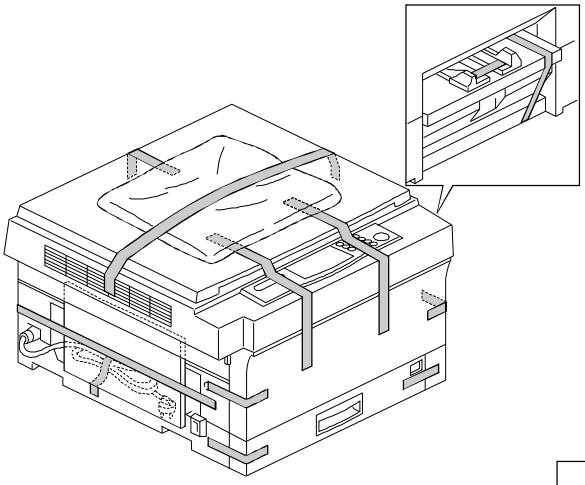
14. INSTALLATION

14.1 COPIER (A202/A203) ACCESSORY CHECK

Check the quality and condition of the accessories in the box against the following list:

1. Model Name Decal (-10, -22 machines)
2. Symbol Explanation Decal - English
3. Symbol Explanation Decal - Multi-language (-26 machines)
4. Installation Procedure - Multi-language (-10, -15, -22, -26, -50 machines)
5. Operation Instructions - English (-10, -15, -17, -22, -26, -28, -29 machines)
6. Operation Instructions - Chinese (-19, -50 machines)
7. NECR - English (-17 machines)
8. NECR - Multi-language (-19, -27, -28, -29 machines)
9. Copy Tray
10. User Survey Card (-17 machines)

14.2 COPIER (A202/A203) INSTALLATION PROCEDURE



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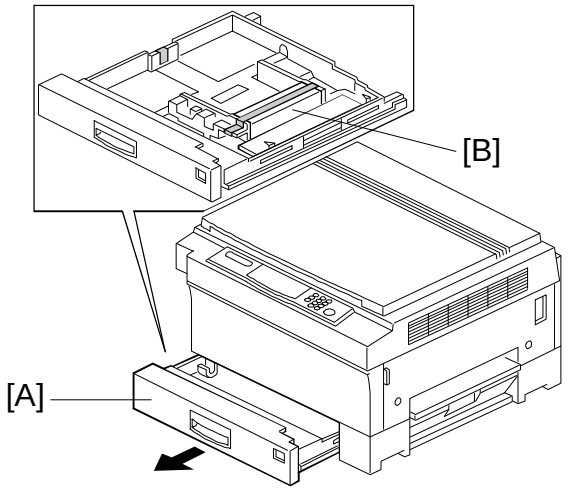

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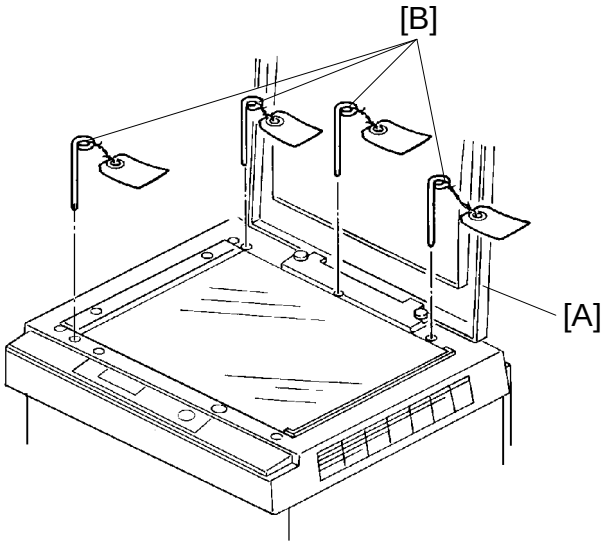
1. Remove the strips of tape from the copier as shown.
2. Pull out the paper tray [A], then remove the foam block [B] and tapes. Close the paper tray.



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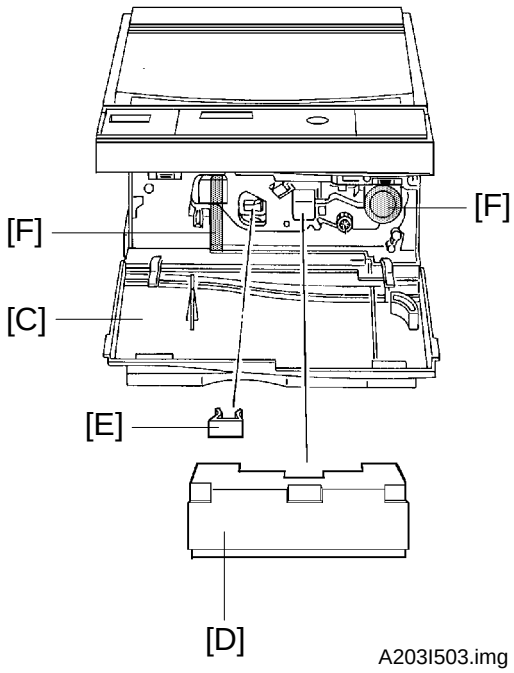

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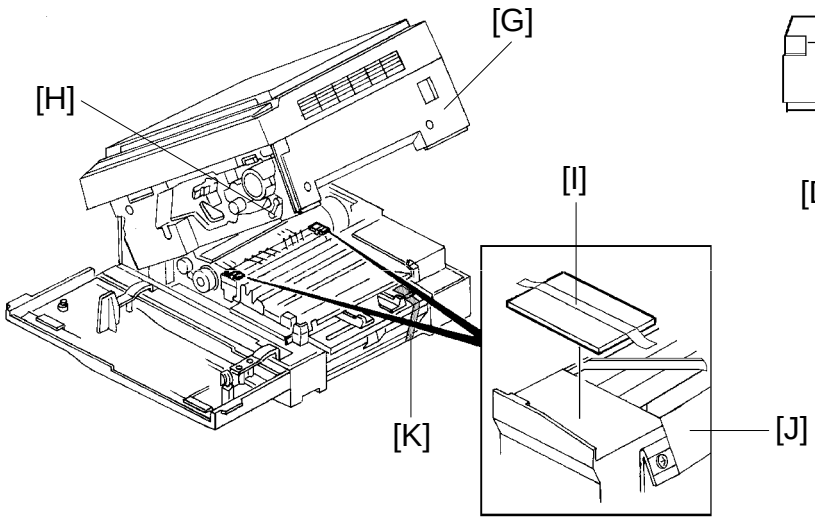

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3. Open the platen cover [A] and remove the lock pins [B].
   (A202 copier: 2 pins, A203 copier: 4 pins)

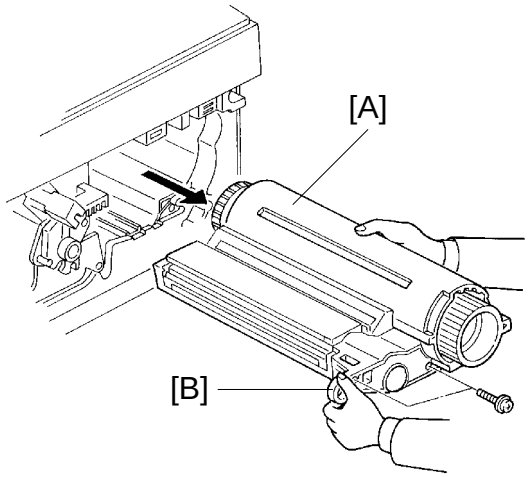
   NOTE: Save the lock pins for future shipping.

4. Open the front cover [C], and remove the foam block [D].

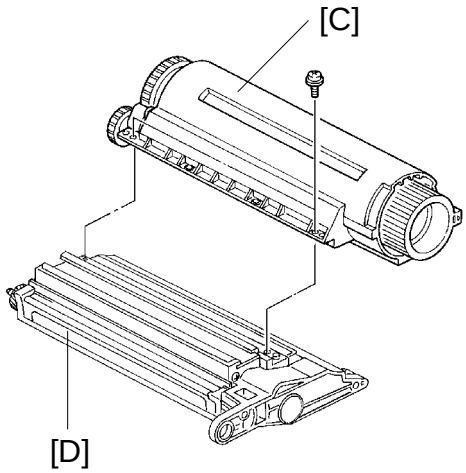
5. Remove the shipping retainer [E] and seals [F].

   NOTE: Save the shipping retainer for future shipping.

6. Open the upper unit [G] by pressing the release lever [H]. Gently remove the shipping spacers [I] from the transfer/separation corona unit [J]. Remove the strip of tape [K] and close the upper unit.



A203I505.img



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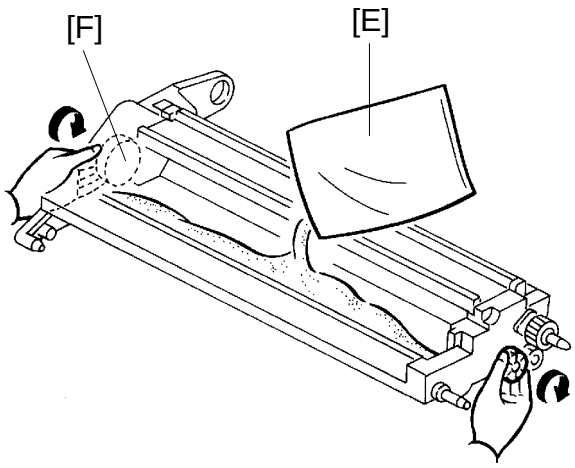
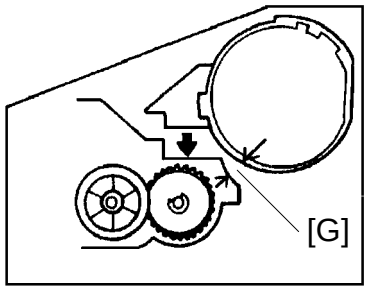


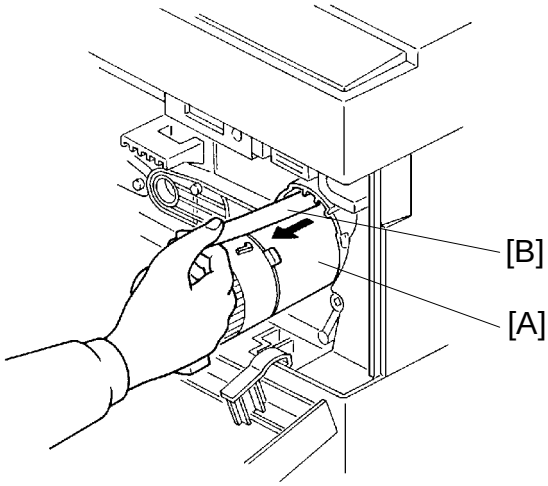


A203I508.img

A203I507.img

7. Pull out the development unit [A] while pulling the left side of the development cover [B] (2 screws), and place it on a clean sheet of paper.
8. Remove the toner supply unit [C] from the development unit [D] (2 screws).
9. Shake one pack of developer [E] well, and pour it into the development unit, while rotating the gears [F] on both sides to distribute the developer evenly as shown in the illustration.
10. Reinstall the toner supply unit on the development unit.

    NOTE: Make sure that there is no gap [G] between the toner supply unit and the development unit. (See the illustration.)



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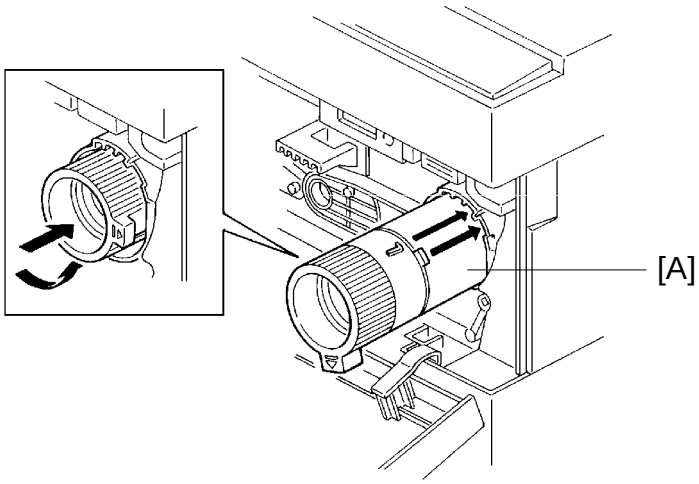
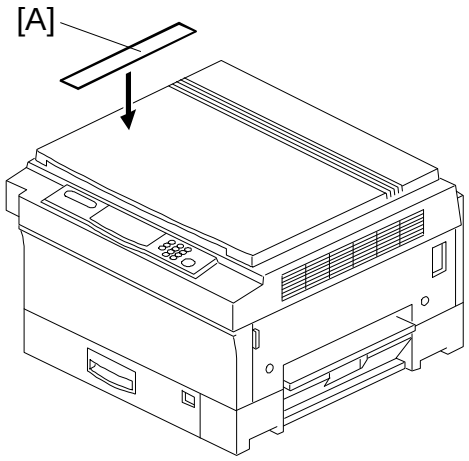


A203I510.img

11. Reinstall the development unit.
12. Shake a toner cartridge [A] well and slide it into the machine, while pulling off the seal [B]. Then, complete installing the cartridge as shown.
13. Close the front cover.

14. Do the developer initial setting procedure.
    1) Plug in the machine and turn on the main switch, then lower the platen cover.
    2) Enter the SP mode as follows:
        a) Enter "71" using the number keys.
        b) Press and hold the C/⊘ key until a dot (•) appears in the top left corner of the copy counter.
        c) Release the C/⊘ key and again press the C/⊘ key again.
        d) Press the ⊡ key, then input 65 with the number keys.
    3) Operate SP 65 as follows.

SP Mode Number		Procedure
65	Developer Initial Setting	Enter "65" using the number keys and press the ◑ key. "50" will be displayed in the copy counter. Press the ◇ key to start the initial setting. It takes about 5 minutes.



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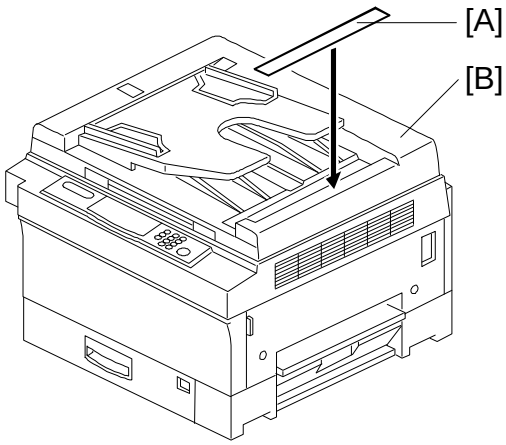

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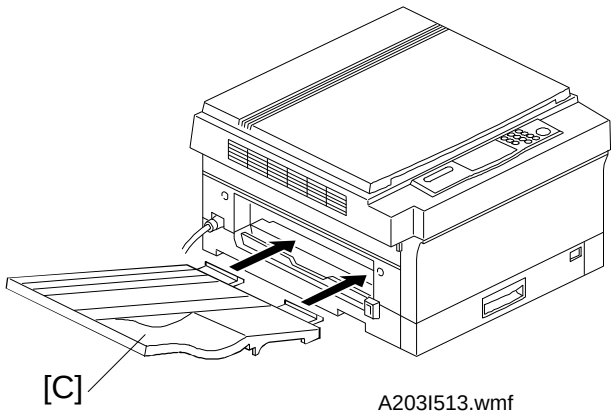

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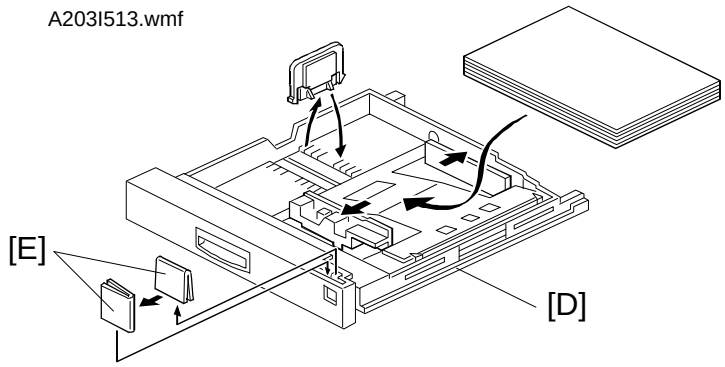

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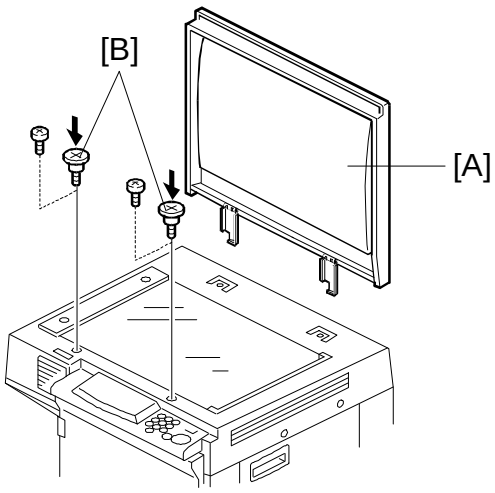
15. Place the decal [A] (symbol explanation) on the platen cover as shown, or when the DF [B] is installed on the machine, place the decal on the DF as shown.
16. Install the copy tray [C].
17. Load paper into the paper tray [D] as explained in the instructions written on the paper tray.
18. Change the paper size plate [E] to display the correct paper size.
19. Check the machine operation and copy quality.

14.3 DOCUMENT FEEDER (A662) ACCESSORY CHECK

Check the accessories against the following list:

Description	Q'ty
1. Voltage Reference Decal	1
2. Thumb Screw M4 x 12	2
3. Stud Screw (M3)	2
4. Installation Procedure - English	1
5. NECR - Multi-language	1
6. Interface Unit for A219 copier	1
7. Accessory Kit for A203 copier	1
• Interface Unit Bracket	1
• Stud Screw (M4)	2
• Harness Clamp	1
• Upper Unit Stand	1
• Stepped Screw (Short)	1
• Stepped Screw (Long)	1
• Magnet	1
• Operation Decal	1
• Screw Driver	1

14.4 DOCUMENT FEEDER (A662) INSTALLATION PROCEDURE



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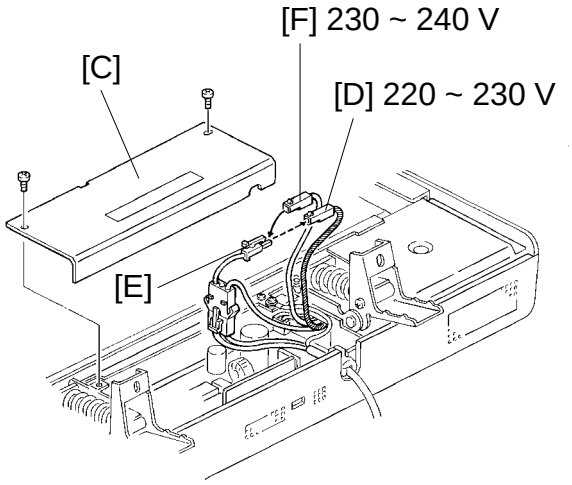


A662I501.img

⚠CAUTION

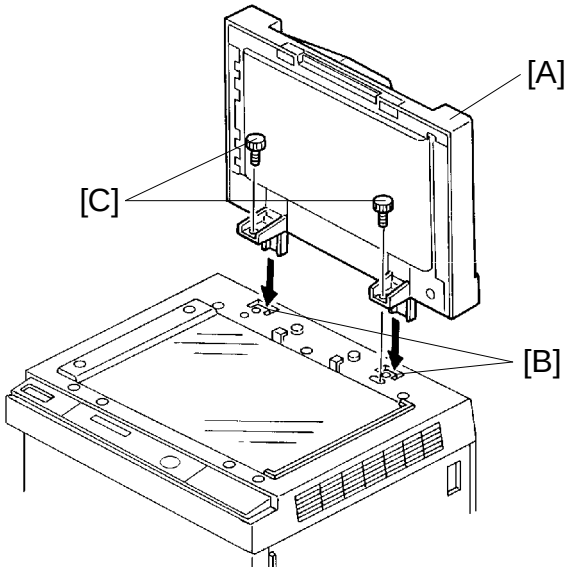
When installing the DF, make sure that the copier is unplugged.

1. Remove the platen cover [A] from the copier.
2. Replace the 2 screws with the 2 stud screws [B].
   - Use the M4 stud screws.
3. Remove the strips of tape from the DF.

⚠CAUTION

The next step (step 4) must be done only in 240 volt areas.

4. Perform the conversion from 220 ~ 230 V to 240 V as follows:
   1) Remove the main board cover [C] (2 screws).
   2) Disconnect the connector for 220 ~ 230 V [D] (Black Wire) from the ac harness connector [E] and connect the connector for 240 V [F] (White Wire) to the ac harness connector.
   3) Reinstall the cover.



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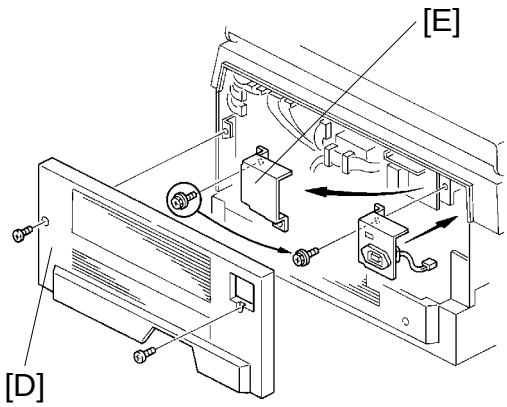

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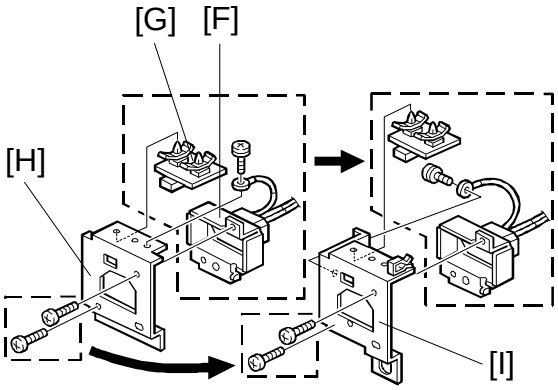

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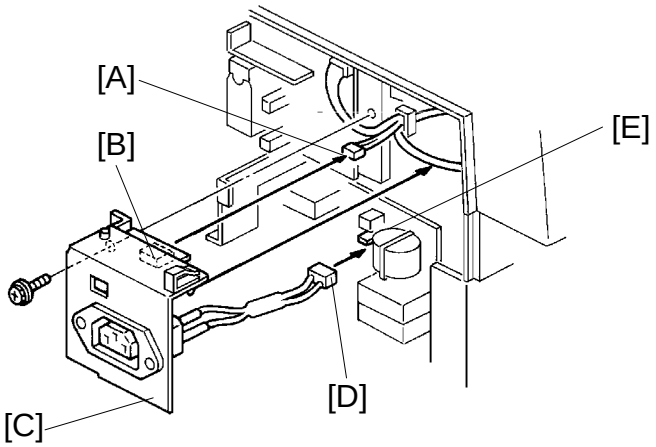
5. Insert the DF [A] into the slots [B] in the copier upper cover.
6. Secure the DF to the copier (2 thumb screws [C]).
7. Remove the upper rear cover [D] (2 screws).
8. Remove the ADF bracket [E] (1 screw and 1 clamp).
9. Remove the interface harness [F] (3 screws) and the interface board with 2 locking supports [G] from the A219 interface unit bracket [H].
10. Attach the interface board and the interface harness to the A203 interface unit bracket [I] (3 screws).



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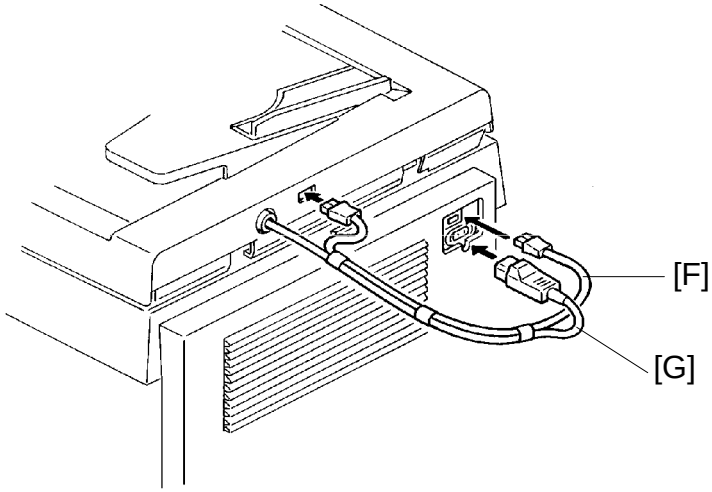

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11. Locate the 4P connector [A] and connect it to the ADF interface board [B], then attach the ADF interface unit [C] to the copier (1 screw) while securing the harnesses through the wire clamp.

    NOTE: Use the screw that secured the ADF bracket. (See the previous page.)

12. Plug the connector [D] (3P/Black) into CN418 on the ac drive board [E] as shown.

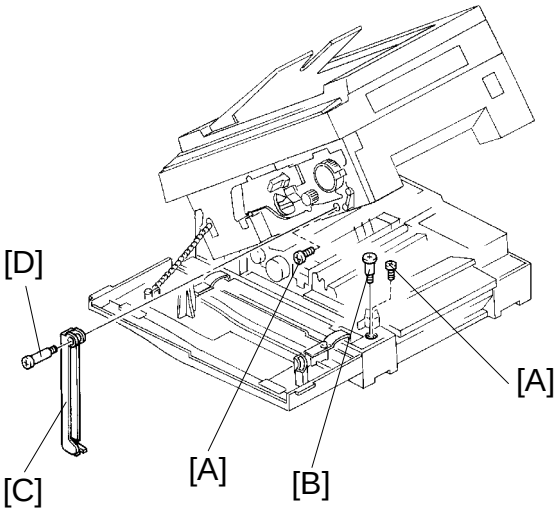
13. Reinstall the upper rear cover.

14. Plug the optics fiber cable [F] into the DF and the copier as shown.

15. Plug the DF power supply cord [G] into the outlet in the rear of the copier as shown.

16. Open the front cover.

17. Lift up the upper unit.



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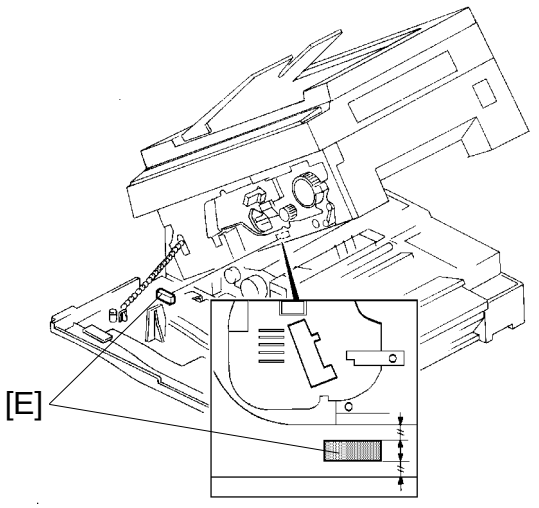

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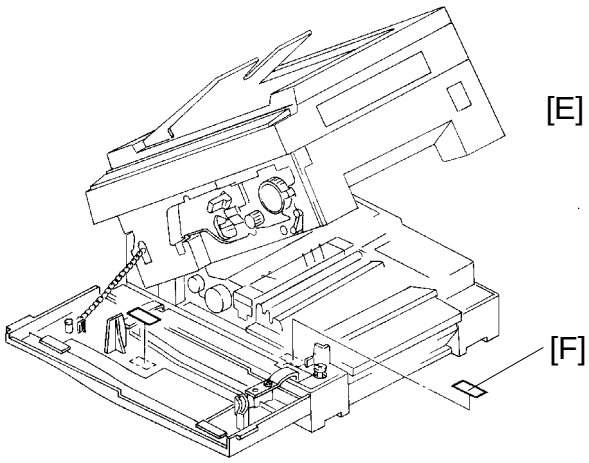

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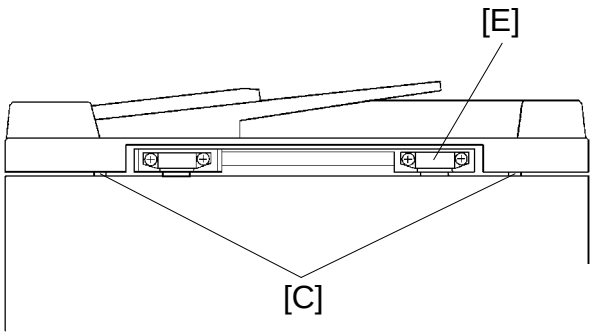
18. Remove 2 screws [A].
19. Tighten the shorter stepped screw [B].
20. Install the upper unit stand [C] (1 longer stepped screw [D]).
21. Attach the magnet [E] as shown.
22. Attach the decal [F] as shown.
23. Close the upper unit and the front cover.
24. Instruct key operators how to use the upper unit stand.



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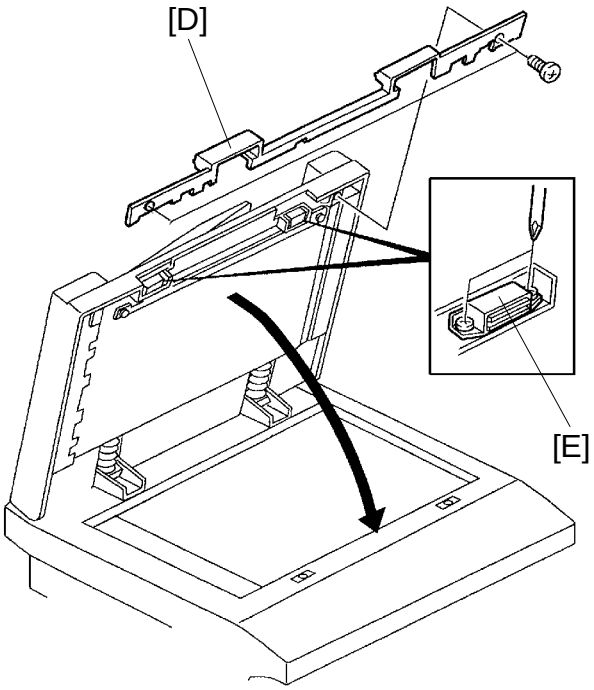

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25. Check that the rubber pad [C] is in contact with the top of the operation panel cover. If it is not, remove the DF grip [D] (2 screws), then adjust the position of the magnet catch [E] so that the rubber pad is in contact with the top of the operation panel cover.

26. Turn on the main switch and check the operation of the DF.

15. SERVICE PROGRAM MODE

15.1 ACCESS PROCEDURE 1-KEY OPERATION

1. Turn on the main switch.
2. Enter "71" by using the number keys.
3. Press and hold the C/⊘ key until a dot (•) appears in the top left corner of the Copy Counter and then release it.
4. Press the C/⊘ key again and then press the ⊡ key.

   NOTE: "5" will blink in the Copy Counter to show that the SP mode has been accessed.
5. Enter the desired SP mode number using the number keys. The SP mode numbers are given in the Service Program Mode Table.

   NOTE: "1" is displayed in the Manual ID indicator (as shown below) instead of "1" in the Copy Counter when SP mode numbers over "100" are entered. The maximum number is "111".

: "1"

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6. Press the ◑ key to view the current setting.

   NOTE: To enter a different SP mode number, press the ◑ key.
7. To leave SP mode, open and close the front cover or turn the main switch off and on.

15.2 MEMORY CLEAR PROCEDURE

– Clear Counters (SP98) –

NOTE: This SP mode clears the following counters:

- SP100: By-pass Feed Copies
- SP101: Paper Tray Copies
- SP103: Total Copies
- SP106: DF Originals
- SP110: Total Misfeeds
- SP111: Total Service Calls

1. Enter SP mode.
2. Enter "98" with the number keys, then press the ◑ key to view the current setting.
3. Enter "1" using the number keys, then press the ◑ and ◑ keys at the same time.

   NOTE: The Manual Image Density indicator blinks when the above procedure is completed.
4. Turn off the main switch.

15.3 CLEAR ALL MEMORY PROCEDURE

CAUTION: The Clear All Memory procedure (SP99) resets all the correction data for copy process control and all the software counters, and returns all modes and adjustments to the default settings. Normally, this SP mode should not be performed.
This procedure is required only when replacing the EEPROM or when the copier malfunctions due to a damaged EEPROM.

1. Enter SP mode.
2. Enter "99" with the number keys, then press the ◑ key to view the current setting.
3. Enter "1" with the number keys, then press the ◑ and ◑ keys at the same time.

   NOTE: The Manual Image Density indicator blinks when the above procedure is completed.
4. Clean the used toner tank, since the toner end counter has been cleared. (See Used Toner Removal in the A151/A152 Service Manual.)

CAUTION: Skipping this step will cause the used toner overflow condition not to be detected properly.

5. Replace the OPC drum with a new one. (See Drum Replacement in the A151/A152 Service Manual.)

CAUTION: Since the drum motor rotation time (SP57) for the drum wear correction has been cleared, the old drum cannot be used. If the old drum is used after all memory is cleared, dirty background may occur.

6. Load new developer. (See Developer Replacement in the A151/A152 Service Manual.)

   NOTE: Since the software counter for the development bias voltage in the toner detection cycle has been cleared, –20 volts will be applied to the development roller for the initial 499 copies.
7. Clean the optics, sensors, and inside of the copier if necessary.
8. Refer to the "FACTORY SETTING" table located inside the upper slit of the inner cover and enter the data for:

   1) SP60: Standard Image Grid Voltage Setting

   2) SP62: Standard ID Sensor Grid Voltage Setting

9. Perform the following SP modes in sequence:
    1) SP66: Drum Initial Setting
    2) SP65: Developer Initial Setting
    3) SP48: Light Intensity Adjustment
    4) SP56: ADS Voltage Adjustment
    5) SP54: Vsg Adjustment
    6) SP42: Registration Adjustment
    7) SP41: Leading Edge Erase Margin Adjustment
    8) SP43: Vertical Magnification Adjustment
    9) SP44: Horizontal Magnification Adjustment (A203 copier only)
    10) SP47: Focus Adjustment (A203 copier only)
10. Turn off the main switch.

15.4 SERVICE PROGRAM MODE TABLE

1. Only items marked with ✻ are different from A151 and A152 copiers.
2. A "†" after the mode name means that copies can be made while in the SP mode. (Copies can be made by pressing the ◇ key after pressing the ◑ key.)
3. In the *Function* column, comments (extra information) are in italics.
4. In the *Settings* column, the default value is printed in bold letters.
5. For some SP modes, display of the settings is different between the A202 and A203 models because of the difference in the operation panel. After entering the desired SP mode number, refer to the notes written at the end of the table to correctly observe the displayed setting. (Which note to refer is described inside the Function column.)

Mode No.		Function	Settings
5	Free Run with Exposure Lamp OFF †	Turn on DPS101-1, then press the ◇ key to start the free run. Press the C/⊘ key to stop the free run. Press the ◑ key in Ready mode to turn off this mode. *Use this mode for the scanner movement check. To save toner, remove the development unit.*	
6	Misfeed Detection Off †	Copies are made without misfeed detection. Press the ◇ key to make a copy. Press the ◑ key in Ready mode to turn off this mode. *Use this mode to check whether a paper misfeed was caused by a sensor malfunction. The total counter increments when copies are made in this mode.*	
7	Aging Mode	Factory use.	
8	Input Check †	Displays the inputs from sensors and switches.	For details, see page 46.
9	Output Check	Turns on electrical components.	For details, see page 47.
11	All Indicators ON	Turns on all the indicators on the operation panel. *To turn off the indicators, press the ◑ key.*	
14	Auto Reset Time Setting (Energy Star)	Select the auto shut off time. The copier main switch is shut off automatically after the selected auto shut off time, if SP77 is at "0".	**0: 30 min.** 1: 15 min. 2: 60 min. 3: 90 min. 4: 120 min.
15	Auto Shut Off Time (Energy Saver Mode)	Selects an auto reset time of 1 or 3 minutes, or cancels this mode. *The copier automatically goes to the energy saver mode at the selected reset time if SP78 is at "1".*	**0: 1 min.** 1: 3 min. 2: None

Mode No.		Function	Settings
16	Count Up/Down	Selects count up or count down.	**0: Up** 1: Down
17	Open	No function.	
18	⊡Key Function (A203 copier only)	Specifies whether reduction or enlargement is selected first when the⊡key is pressed.	**0: Reduction** 1: Enlargement
19	ADS Priority	Specifies whether the copier defaults to ADS or manual mode when the main switch is turned on.	**0: ADS** 1: Manual
✻ 22	SADF Shut off Time (A203 copier only)	Selects the shut off time for SADF mode. The DF must be installed on the machine.	**0: 5 s** 1: 60 s
29	Fusing Temperature Control	Selects the fusing temperature control mode. *After selecting the control mode and turning the main switch off/on, the fusing temperature control mode is changed.*	**0: ON/OFF control** 1: Phase control
30	Toner Supply Mode	Selects the toner supply system. *See SP31/SP32 for the toner supply amount.*	**0: Detect Mode** 1: Fixed Mode
31	Toner Supply Ratio (Detect Mode)	Determines how much toner is supplied in detect mode.	**0: 15%** 1: 7% 2: 30% 3: 60%
32	Toner Supply Ratio (Fixed Mode)	Determines how much toner is supplied in fixed mode.	**0: 7.0%** 1: 3.5% 2: 10.5% 3: 14.0%
33	ID Sensor Bias	Sets the bias voltage applied to the development roller for the ID Sensor Pattern. *0: Vo* *1: Vo+40 V* *2: Vo–20 V* *3: Vo–40 V*	Toner Density **0: Normal (Vo)** 1: Low 2: High 3: Higher
34	ADS Level	Selects the image density level in ADS mode. *setting: 1* *Increases grid voltage (–40 V). Development bias voltage is not changed.* *setting: 2* *Increases development bias voltage (–40 V). Grid voltage is not changed.*	**0: Normal** 1: Darker 2: Lighter
35	ID Detection Interval	ID sensor check is performed every 5 copies or 10 copies. *If low image density occurs in the near end condition, change the setting to "1".*	**0: 10 copies** 1: 5 copies

Mode No.		Function	Settings
37	Image Bias Adjustment †	Adjusts image bias output if the image density at level 4 cannot be adjusted by the Light Intensity adjustment (SP48). *0: Vo* *1: Vo+40 V* *2: Vo+20 V* *3: Vo–20 V* *4: Vo–40 V*	**0: Normal (Vo)** 1: Darkest 2: Darker 3: Lighter 4: Lightest
41	Lead Edge Erase Margin Adjustment †	Adjusts the lead edge erase margin. *0.4 mm per step. (–3.2 mm to +2.8 mm)*	0 ~ 15 **Default = 8**
42	Registration Adjustment †	Adjusts registration. *0.4 mm per step. (+3.2 mm to –2.8 mm)*	0 ~ 15 **Default = 8**
43	Vertical Magnification Adjustment †	Adjusts magnification in the paper travel direction. *0.2% per step. (–1.6% to +1.4%)*	0 ~ 15 **Default = 8**
44	Horizontal Magnification Adjustment (A203 copier only) †	Adjusts magnification perpendicular to the direction of paper travel. *0.2% per step. (–1.6% to +8.4%)*	0 ~ 50 **Default = 8**
45	Registration Buckle – Paper Feed †	Adjust the amount of paper buckle in the registration area. *0.4 mm per step. (–3.2 mm to +2.8 mm)*	0 ~ 15 **Default = 8**
47	Focus Adjustment (A203 copier only) †	Adjusts the 4th/5th mirror position to correct focus. *This mode must be done after horizontal and vertical magnification adjustment (SP43 and 44).*	0 ~ 100 **Default = 40**
48	Light Intensity Adjustment †	Adjusts the exposure lamp voltage. *Before performing this mode, clean the optics and perform SP95. After performing this mode, perform SP56. The exposure lamp voltage is adjusted on the production line.* ***Refer to NOTE 2 for the A202 copier.***	100 ~ 170 **Default = 126**
49	Fusing Temperature Adjustment	Adjusts the control temperature of the hot roller during copying in 1°C steps.	175°C ~ 200°C **Default = 185°C**
50	Image Bias Adjustment at ID Level 7 †	Adjusts image bias voltage at ID level 7. *0: Vo* *1: Vo+40 V* *2: Vo–40 V* *3: Vo–80 V*	**0: Normal (Vo)** 1: Darker 2: Lighter 3: Lightest

Mode No.		Function	Settings
51	Exposure Lamp Setting Display	Displays the exposure lamp setting with a reference number. *The exposure lamp and optics cooling fans turn on for 10 seconds when the ◑ key is pressed. Press the C/⊘ key to turn this mode off. Do not repeat more than 5 times, to avoid overheating the optics cavity.* ***Refer to NOTE 2 for the A202 copier.***	100 ~ 150
52	Fusing Temperature Display	Displays the fusing temperature. ***Refer to NOTE 2 for the A202 copier.***	
54	Vsg Display/ Adjustment	Displays Vsg. *Adjust Vsg to 4.0 ± 0.2 V using VR102 on the main board. The main motor and the ID sensor LED turn on when the ◑ key is pressed.* ***Refer to NOTE 3 for the A202 copier.***	
55	Vsg & Vsp Display †	Displays the Vsg and Vsp readings. The Vsg reading is displayed while the "0" key is held down. The A202 copier displays the Vsp reading while the "1" key is held down. In the A203 copier, Vsp is always displayed in the magnification indicator. To stop this mode, press the C/⊘ key. *The Vsp and Vsg voltage readings are updated every 10 or 5 copies depending on the SP35 selection. In free run mode, the Vsg and Vsp readings are updated every copy cycle.* ***Refer to NOTE 3 for the A202 copier.***	
56	ADS Reference Voltage Display and Adjustment	Displays the ADS reference voltage. *Before performing this mode, clean the optics, and perform SP95 and SP48. After adjusting the light intensity (SP48), place 5 sheets of A3 (LDG) white paper on the exposure glass and select this mode. Adjust the ADS voltage to 2.5 ± 0.1 V using VR101 on the main board.* ***Refer to NOTE 3 for the A202 copier.***	
57	Drum Rotation Time	Displays the total time that the drum has rotated. *"Minutes" is displayed first. Press and hold the ◈ key to display "Hours".*	
58	Toner End Counter	Displays the toner end condition counter. *The toner end counter counts up 1 after 200 copies are made following toner cartridge replacement.*	
✻ 59	Optics Temperature Display	Displays the optics temperature detected by the optics thermistor. Press the ◈ key to monitor the temperature during the normal copy cycle.	

Mode No.		Function	Settings
60	Standard Image Grid Voltage Setting	Factory use only. **Do not change the setting.** ***Refer to NOTE 5.***	0 ~ 8 **Default = 4**
62	Standard ID Sensor Grid Voltage Setting	Factory use only. **Do not change the setting.** ***Refer to NOTE 5.***	0 ~ 8 **Default = 4**
63	Toner Density Level Setting	Factory use only. **Do not change the setting.**	
64	Toner Density Level Display	Displays the toner density level detected during initial setting (SP65). *Setting Vsp/Vsg(%)* *0: 12–15* *1: 0–7* *2: 8–11* *3: 16–21* *4: 22–100*	0 ~ 4
65	Developer Initial Setting	Agitates new developer for about 5 minutes. "50" is displayed in the copy counter when the ◑ key is held down. Press the ◈ key to start the initial setting. ***Initial setting must be done when new developer is installed.*** *The copier automatically returns to normal mode after initial setting is completed.*	
66	Drum Initial Setting	Used to condition the new drum. ***Initial setting must be done when a new drum is installed.*** *The Drum Rotation Time (SP57) and the OPC counter (SP69) are cleared.*	**0: No** 1: Yes
69	OPC Counter	Shows the total number of copies made with the drum installed in the machine. ***Refer to NOTE 4.***	
✻ 71	V_L Correction Selection	Selects or deselects V_L correction. Keep this setting at 0.	**0: V_L correction** 1: No V_L correction
✻ 77	Auto Shut Off (Energy Star) On/Off	Selects the "Automatic Shut off" mode. *The copier automatically shuts itself off at the auto shut off time selected (SP14).*	0: Yes (Default for N. America) 1: No (Default for other areas)
78	Auto Energy Saver Mode	Selects the "Automatic Energy Saver" mode. *The copier automatically goes to Energy Saver mode at the auto reset time selected (SP15).*	**0: No** 1: Yes

Mode No.		Function	Settings
✻ 80	Horizontal Edge Margin Width Adjustment	Selects whether the side erase mechanism changes when the optional document feeder is installed. *Compared with the platen mode erase, the next inmost LED block will turn on to erase.*	**0: Always stays in Platen Mode** 1: DF Mode
✻ 81	Factory Initialization	Factory use only. **Do not change the setting.**	
83	Toner End Counter Clear	Clears the toner end counter (SP58). Resets the used toner overflow condition (E70) if it is detected. ***This mode must be performed when the used toner tank is cleaned.***	**0: No** 1: Yes
86	Energy Saving Ratio	Selects the energy saving ratio. *The greater the saving ratio, the longer the waiting time until the copier returns to the ready condition.* *Saving Ratio — Waiting Time* *0: 56% — 25 s* *1: 47% — 19 s* *2: 37% — 12 s* *3: 25% — 5 s*	**0: 56%** 1: 47% 2: 37% 3: 25%
95	V_L Correction Reset	Resets the exposure lamp setting and counter for the V_L correction. *Before performing this mode, clean the optics parts. After performing this mode, perform SP48 and SP56.*	**0: No** 1: Yes
96	Toner End Force Cancel	The Toner End condition is canceled forcibly. By pressing the ◑ key to enter this SP mode, the toner end condition is canceled.	
✻ 97	Service Call (E5) Reset	Resets a service call (E5) condition. Turn the main switch off and on to check if the service call condition is reset.	
98	Clear Counters	Clear the following counters: ✻Copy counters ✻SC counters ✻Misfeed counters To clear, enter "1" then press the◑ key and the ◑ key at the same time. To avoid resetting the counter by mistake, the counter is reset only when the◑ key and the ◑ key are pressed at the same time.	**0: No** 1: Yes
99	Clear All Memory	Clear all counters and returns all modes to the default settings. See the Clear All Memory Procedure in this section for more details. To clear, enter "1" then press the◑ key and the ◑ key at the same time. To avoid resetting the counter by mistake, the counter is reset only when the◑ key and the ◑ key are pressed at the same time.	**0: No** 1: Yes

Mode No.		Function	Settings
100	By-pass Feed Copies	Displays the total number of copies fed from the by-pass feed table.	
		Refer to NOTE 4.	
101	Paper Tray Copies	Displays the total number of copies fed from the paper tray.	
		Refer to NOTE 4.	
102	Open	No function.	
103	Total Copies	Displays the total number of copies.	
		Refer to NOTE 4.	
106	DF Originals (A203 copier only)	Displays the total number of originals fed from the DF.	
		Refer to NOTE 4.	
110	Misfeeds (total)	Displays the total number of paper misfeeds.	
		Refer to NOTE 4.	
111	Total Service Calls	Displays the total number of times the service call indicator has turned on.	

NOTE 1: 1) After the following SP mode numbers are entered, the copier goes automatically into copy mode when the Auto Image key is pressed:
SP mode numbers: 5, 6, and 55

2) After the following SP mode numbers are entered and the key is pressed, select the desired input numbers or SP mode settings and press the key.
SP mode numbers: 8, 37, 41, 42, 43, 44, 45, 47, 48, and 50

NOTE 2: The A202 copier displays the SP mode setting in the Copy Counter. Since the Copy Counter has only 2 digits, the first digit is displayed in the Manual Image Density indicator when the setting exceeds "99".

: "1"

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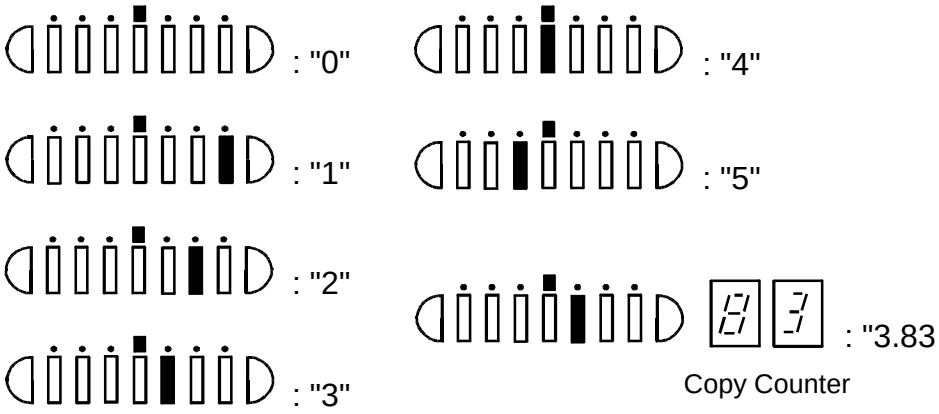
NOTE 3: Make copies or perform free run to display the SP mode setting. The A202 copier displays the SP mode setting in the Copy Counter. Since the Copy Counter has only 2 digits, the first digit is displayed in the Manual Image Density indicator as shown below (digits after the decimal place are displayed in the Copy Counter):



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NOTE 4: **-- A202 copier --**

The A202 copier displays the SP mode setting in the Copy Counter. The first two digits are displayed first. Press the ⊡ key once to display the next two digits and press the ⊡ key one more time to display the last two digits (six digits in total).

-- A203 copier --

The first three digits are displayed in the Magnification Indicator. Press and hold the ⊡ key to display the last three digits (six digits in total).

NOTE 5: The setting will vary depending on the factory setting. Refer to the "FACTORY SETTING" table located in the upper inner cover.

15.5 SP MODE 8-INPUT CHECK

– How to check sensor/switch inputs for the A202 copier –

1. Enter "8" using the number keys, then press the ◑ key.
2. The Manual Image Density indicator is used to display the inputs from the following components.
   If you wish to see how the inputs behave during a copy cycle, press the ◈ key to perform this mode while making a normal copy.

Sensor	Manual ID Level Indication	Display: Condition
Registration	ID Level 1	ON: Paper Present
Exit	ID Level 2	ON: Paper Present
Paper Tray Switch	ID Level 3	ON: Paper Tray Closed
Relay Sensor	ID Level 4	ON: Home Position
Scanner HP Sensor	ID Level 5	ON: Actuator inside sensor
Key Counter Set Signal	ID Level 6	ON: Key Counter Set (Ready for Copying)

– How to check sensor/switch inputs for the A203 copier –

1. Enter "8" using the number keys, then press the Auto Image ◑ key.
2. Enter the desired number from the following table.
3. Press the ◑ key again.
4. Enter the number of copies and press the ◈ key.
   Either "0" or "1" is displayed in the Magnification Indicator.

No.	Sensor/Switch/Signal	Display: Condition	
		"0"	"1"
1	Registration Sensor	Paper not detected (HIGH)	Paper detected (LOW)
2	Exit Sensor		
3	Paper Tray Switch	Paper tray opened (HIGH)	Paper tray closed (LOW)
4	Relay Sensor	Paper not detected (HIGH)	Paper detected (LOW)
12	Scanner HP Sensor	Sensor not actuated (LOW)	Sensor actuated (HIGH)
13	4th/5th Mirror HP Sensor (A203 copier only)		
14	Lens HP Sensor (A203 copier only)		
20	ADF Installation	ADF not installed	ADF installed
21	ADF Lift Switch	ADF closed	ADF opened
22	Key Counter Set Signal	Key Counter not set	Key Counter set

15.6 SP MODE 9--OUTPUT CHECK

-- How to turn electrical components on/off --

1. Enter "9" with the number keys, then press the ◑ key.
2. Enter the desired number from the following table.
3. Press the ◈ key to turn on the electrical component.
4. Press the C/⊘ key to turn off the electrical component.

Number	Electrical Component
1	Main Motor + Quenching Lamp
2	Charge Corona + Standard Image Grid
3	Charge Corona + Standard ID Sensor Grid
5	Transfer Corona
6	Separation Corona
8	Erase Lamp
10	ID Sensor LED
11	Toner Supply Motor
12	Registration Clutch
13	Paper Feed Clutch
15	Relay Roller Clutch
17	Machine Shut Off
18	Exhaust Blower Motor
19	Optics Cooling Fan
20	Exposure Lamp + Optics Cooling Fan
21	Total Counter
30 ~ 37	Development Bias Voltage in 40-volt steps starting at-120 volts
38	Development Bias Voltage =--500 volts
40 ~ 48	Grid Voltage in 60-volt steps starting at--400 volts

15.7 SERVICE CALL AND USER CODE TABLE

NOTE: Only items marked with ✻ are different from A151 and A152 copiers.

Service Call Code

NOTE: Due to the small capacity of EEPROM, the individual service call counters that were available in the base copiers have been eliminated.

E-code	Contents	Note
11	**Exposure Lamp Error** The feed back signal becomes higher than 4.2 volts (rms) for 1.0 second when the exposure lamp is on, or it becomes higher than 1.0 volt (rms) for 1.0 second when the exposure lamp is off.	
12	**Exposure Lamp Error** The feed back signal falls below 0.5 volt (rms) for 1.0 second when the exposure lamp is on, or the exposure lamp stays on for longer than 10 seconds.	
13	**Zero Cross Signal Error** The CPU does not receive the zero cross signal within 2.0 seconds.	
✻ 14	**Frequency Detection Error** • The detected frequency is not within 45 ~ 65 Hz. • The fusing lamp stays on for longer than 38 seconds while the main motor is off.	
21	**Scanner Home Position Error** The scanner home position sensor's output remains LOW (de-actuated) for 9 seconds after the main switch is turned on.	
22	**Scanner Home Position Error** The scanner home position sensor's output remains HIGH (actuated) for 1.0 second after the scanner starts.	
28	**Lens Home Position Error** (A203 copier only) The lens home position sensor's output remains LOW (de-actuated) for 6.0 seconds after the lens moves to the home position.	
29	**Lens Home Position Error** (A203 copier only) The lens home position sensor's output remains HIGH (actuated) for 4.0 seconds after the lens leaves the home position.	
2A	**4th/5th Mirror Home Position Error** (A203 copier only) The 4th/5th mirror home position sensor's output remains LOW (de-actuated) for 3.0 seconds after the 4th/5th mirror assembly moves to the home position.	

E-code	Contents	Note
2B	**4th/5th Mirror Home Position Error** (A203 copier only) The 4th/5th mirror home position sensor's output remains HIGH (actuated) for 4.0 seconds after the 4th/5th mirror assembly leaves the home position.	
40	**Optics Thermistor Error** The optics thermistor is defective (open).	
✻ 52	**Fusing Warm-up Error** The temperature detected by the thermistor does not reach 150°C within 25 seconds after the main switch is turned on.	SP97 must be performed to clear this service call condition.
✻ 53	**Fusing Overheat** The temperature detected by the thermistor becomes higher than 230°C.	
✻ 54	**Fusing Error** The temperature detected by the thermistor does not rise more than 20°C within 12 seconds when the fusing lamp is turned on continuously in the main motor off condition.	
✻ 55	**Fusing Thermistor Open** The temperature detected by the thermistor does not reach 40°C within 15 seconds after the main switch is turned on.	
✻ 70	**Used Toner Overflow** The overflow counter reached 80 k copies or the toner cartridge was replaced 10 times.	
✻ 96	**DF Timing Pulse Error** The DF CPU does not receive a DF timing pulse within 100 milliseconds. **Main Switch Error** The main switch does not turn off within 8.5 seconds after the auto shut off signal is sent to the main switch. -- Possible Cause -- • Defective main switch • Poor connection of main switch relay harness	

16. SERVICE TABLES

16.1 TEST POINTS

Copier Main Board

Number	Function
TP101	HET (Fusing Thermistor)
TP102	ADS (Auto Image Density Sensor) Adjust the voltage to +2.5± 0.1 volts with VR101.
TP103	ETH (Optics Thermistor)
TP105	PSE (ID Sensor Voltage) Adjust the voltage to +4.0± 0.2 volts with VR102.
TP106	EXPO (Exposure Lamp Voltage)
JP101	Key Counter (Cut this jumper wire when installing the key counter on the machine.)

16.2 DIP SWITCHES AND JUMPER SWITCHES

The following jumper switches are not included.

✻ JPS101-R (Upper)
✻ JPS101-C (Lower)

16.3 VARIABLE RESISTORS

CC/Grid/Bias Power Pack

Number	Function
VRC	Adjusts the charge corona current
VRG	Adjusts the standard grid voltage
VRB	Adjusts the standard development bias voltage

17. PREVENTIVE MAINTENANCE SCHEDULE

17.1 PM TABLE

The DF section has been changed.

The copier section is the same.

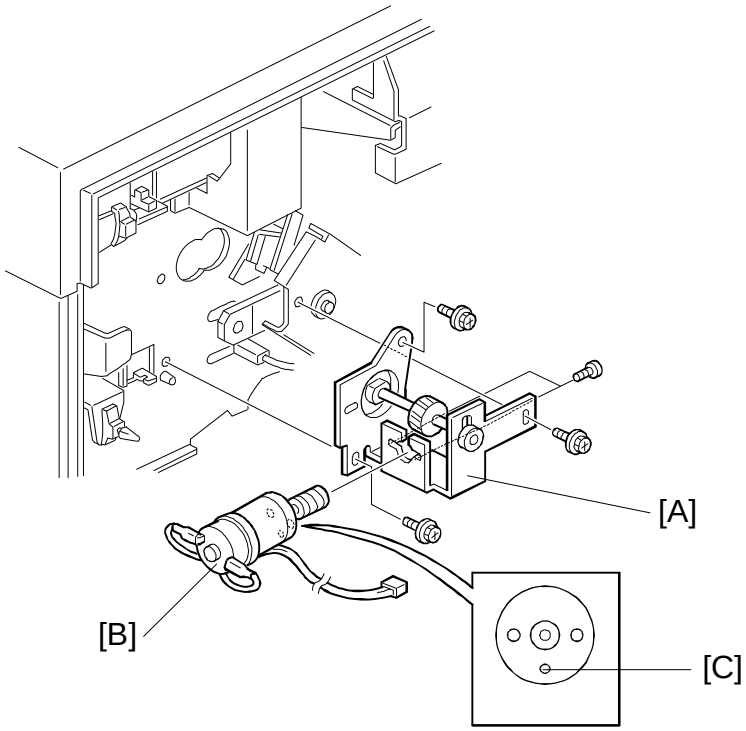
	EM	24 k	48 k	Notes
DOCUMENT FEEDER (A662) (for originals)				
Transport Belt	C	R	R	Belt cleaner
Friction Belt	C	R	R	Belt cleaner
Pick-up Roller	C	C	C	Soft cloth dampened with water
Feed Roller	C	C	C	Soft cloth dampened with water

✻ Transport Belt has been made a PM part.

✻ The cleaning method has been changed.

18. REPLACEMENT AND ADJUSTMENT

18.1 TONER SUPPLY MOTOR REPLACEMENT



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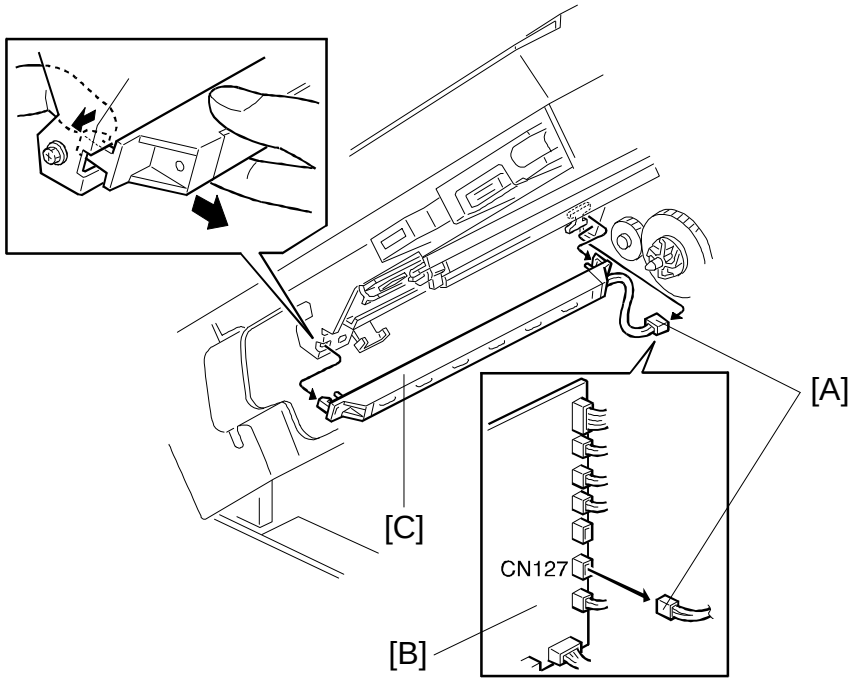
1. Turn off the main switch.
2. Remove the upper rear cover and main control board (all connectors and 4 locking supports).
3. Remove the toner supply motor bracket [A] (3 screws).
4. Remove the motor [B] from the bracket (2 screws).

NOTE: When reinstalling, make sure that the hole [C] is positioned down, as shown.

18.2 QUENCHING LAMP REPLACEMENT



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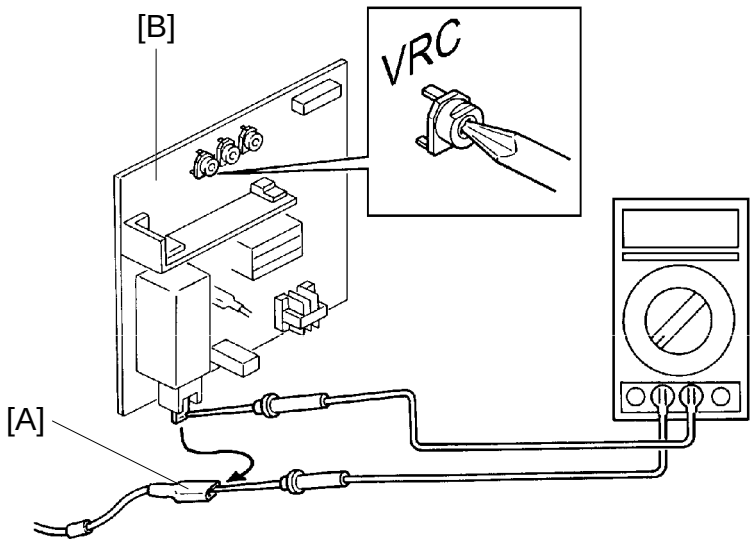
1. Open the front cover.
2. Remove the following parts:
   - Inner cover
   - Development unit
   - Cleaning unit
   - Charge corona unit
   - Upper rear cover
3. Hold down the top of the upper unit and open the upper unit by pushing the release lever.
4. Remove the drum unit (2 screws).

   NOTE: Cover the drum with some sheets of paper to prevent the drum from being exposed to light.
6. Disconnect the connector [A] (CN127) from the main control board [B].
7. Remove the quenching lamp [C] from the copier frame as shown.

   NOTE: Do not use alcohol to clean the quenching lamp. This damages the resin in the covers of the LEDs.

18.3 CHARGE CORONA CURRENT ADJUSTMENT



A203R502.img

ADJUSTMENT STANDARD	Adjusting VR	SP Mode
DC --400 ± 3 μA	VRC	SP9-2

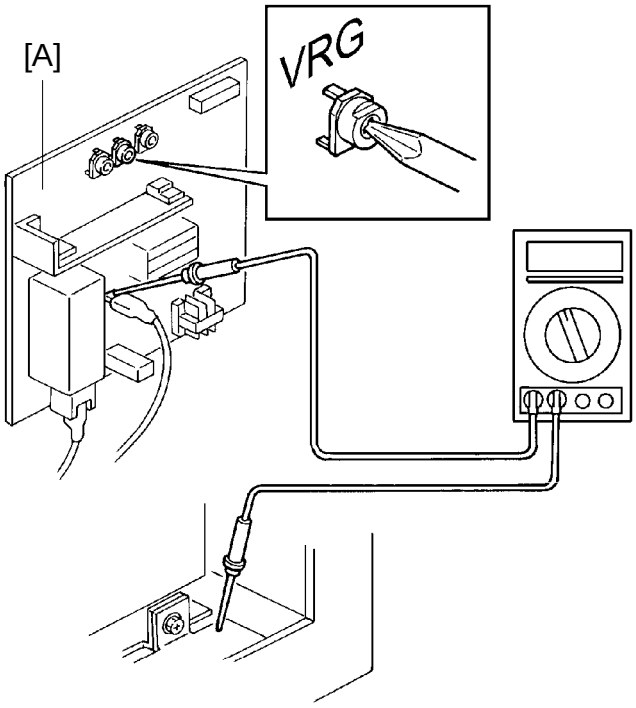
NOTE: 1) VRC on the CC/Grid/Bias power pack spare parts is pre-adjusted. Usually it is not necessary to adjust VRC when the CC/Grid/Bias power pack is replaced.

2) Keep the high voltage wire terminal [A] away from the copier frame. Otherwise, electrical leakage may interfere with current measurement.

1. Turn off the main switch.
2. Disconnect the charge corona terminal [A] from the CC/Grid/Bias power pack [B].
3. Select the dc 2 mA range on the digital multimeter.
4. Connect the multimeter leads as shown, then measure the charge corona current.

   NOTE: Keep the multimeter leads away from the main board.
5. Turn on the main switch, close the front cover safety switch and turn on the charge corona using SP9-2.
6. Adjust the charge corona current to --400 ± 3 μA by turning VRC on the CC/Grid/Bias power pack.
7. Press the C/⊘ key and turn off the main switch.

18.4 GRID VOLTAGE ADJUSTMENT (SP9-46)



A203R503.img

ADJUSTMENT STANDARD	Adjusting VR	SP Mode
DC --760 ± 10 µA	VRG	SP9-46

NOTE: VRG on the CC/Grid/Bias power pack spare parts is pre-adjusted. Usually it is not necessary to adjust VRG when the CC/Grid/Bias power pack is replaced.

1. Set the multimeter range to dc 1,500 V and connect the multimeter leads as shown.

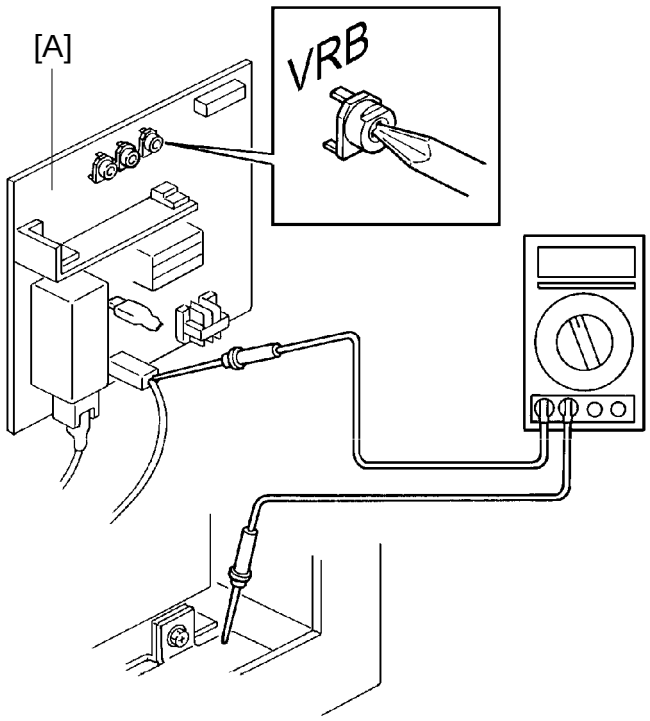
   NOTE: Keep the multimeter leads away from the main board.

2. Turn on the main switch, close the front cover safety switch, and turn on the grid voltage using SP9-46.

3. Adjust the grid voltage to --760 ± 10 V by turning VRG on the CC/Grid/Bias power pack [A].

4. Press the C/⊘ key and turn off the main switch.

18.5 DEVELOPMENT BIAS VOLTAGE ADJUSTMENT (SP9-38)



A203R504.img

ADJUSTMENT STANDARD	Adjusting VR	SP Mode
DC –500 ± 10 V	VRB	SP9-38

NOTE: VRB on the CC/Grid/Bias power pack spare parts is pre-adjusted. Usually it is not necessary to adjust VRB when the CC/Grid/Bias power pack is replaced.

1. Set the multimeter range to dc 1,500 V and connect the multimeter leads as shown.

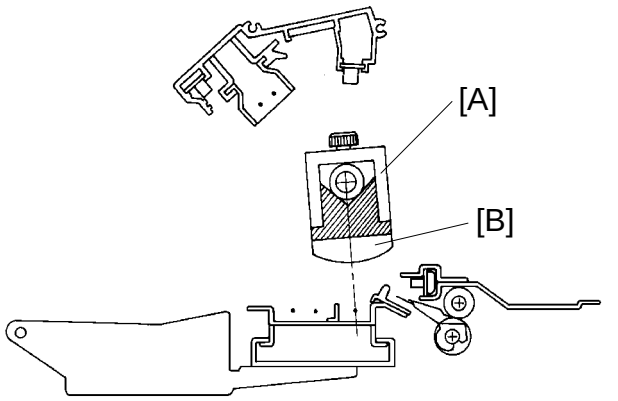
   NOTE: Keep the multimeter leads away from the main board.

2. Turn on the main switch, close the front cover safety switch, then turn on the development bias using SP9-38.

3. Adjust the development bias voltage to –500 ± 10 V by turning VRB on the CC/Grid/Bias power pack [A].

4. Press the C/⊘ key and turn off the main switch.

18.6 TRANSFER CORONA CURRENT ADJUSTMENT (SP9-5)



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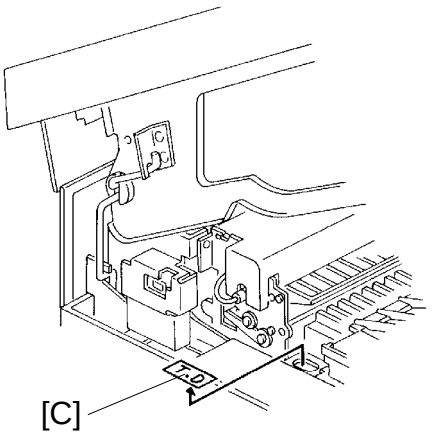
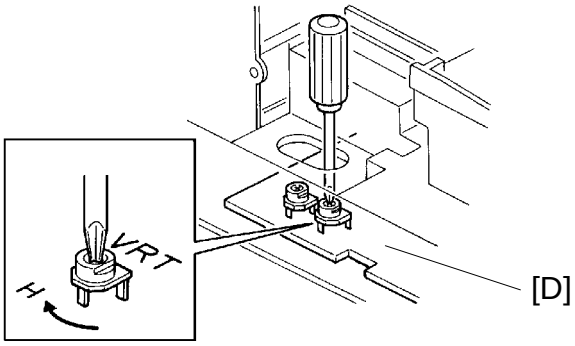


A203R506.img

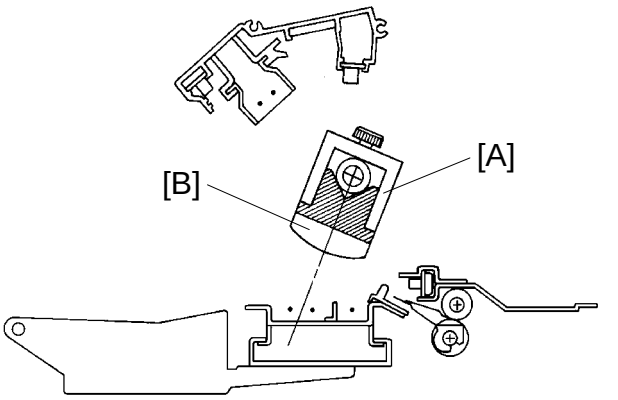


A203R507.img

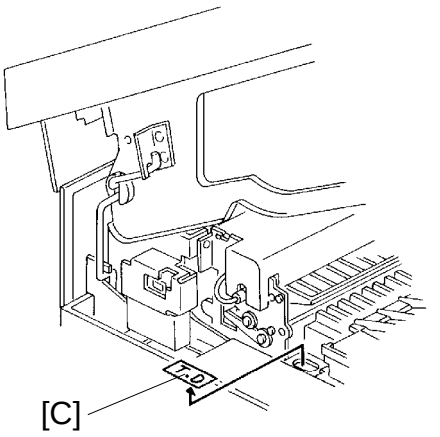
ADJUSTMENT STANDARD	Adjusting VR	SP Mode
DC –93.6 ± 2 μA	VRT	SP9-5

1. Reinstall the TC/SC corona unit and position the drum shoe [A] on the center of the shaft so that the axis of the current detection plate [B] is aligned with the transfer corona wire as shown.
2. Remove the seal [C] from the transport unit.
3. Select the dc 200 μA range on the digital multimeter.
4. Turn on the main switch, close the front cover safety switch, and turn on the transfer corona using SP9-5.
5. Adjust the transfer corona current to dc –93.6 ± 2 μA using VRT on the TC/SC power pack [D].
6. Press the C/⊘ key and turn off the main switch.

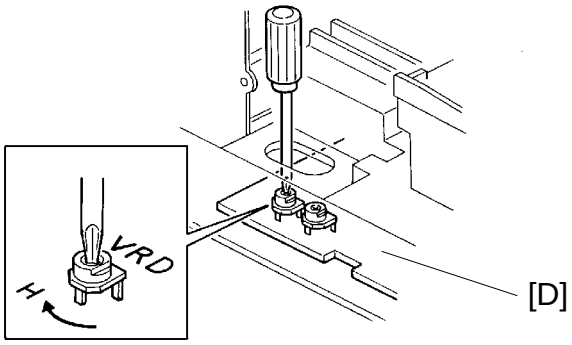
18.7 SEPARATION CORONA CURRENT ADJUSTMENT (SP9-6)



A203R508.img



A203R506-2.img



A203R509.img

ADJUSTMENT STANDARD	Adjusting VR	SP Mode
AC 145.6 ± 5.0 μA	VRD	SP9-6

1. Reinstall the TC/SC corona unit and position the drum shoe [A] on the center of the shaft so that the axis of the current detection plate [B] is aligned with the separation corona wire as shown.

   NOTE: Make sure that the drum shoe does not touch the pick-off pawls.

2. Remove the seal [C] from the transport unit.

3 Select the ac 200 μA range on the digital multimeter.

4. Turn on the main switch, close the front cover safety switch, and turn on the separation corona using SP9-6.

5. Adjust the separation corona current to ac 145.6 ± 5.0 μA using VRD on the TC/SC power pack [D].

6. Press the C/⊘ key and turn off the main switch.